

EMGT 835 Field Project Report

Analysis of a Management Buyout Opportunity

By

Steven B. Owens

Master of Science

The University of Kansas

Fall Semester, 2005

An EMGT Field Project report submitted to the Engineering Management Program and the Faculty of the Graduate School of The University of Kansas in partial fulfillment of the requirements for the degree of Master of Science.

EMGT 835 Field Project Report

Analysis of a Management Buyout Opportunity

By

Steven B. Owens

Master of Science

The University of Kansas

Fall Semester, 2005

An EMGT Field Project report submitted to the Engineering Management Program and the Faculty of the Graduate School of The University of Kansas in partial fulfillment of the requirements for the degree of Master of Science.

Charles W. Keller
Committee Chair

Date

Dr. Robert Zerwekh
Committee Member

Date

Herb Tuttle
Committee Member

Date

Acknowledgements

There are many people who have contributed in one way or another to this project, and I am gracious for all of their contributions. There were a few standouts that deserve special recognition. I would like to thank my field project advisor, Professor Charles W. Keller, for his guidance and patience during the completion of the project. My fellow workers at Swift who supported me in my many efforts and strived to improve the TekNet product despite many obstacles which made our jobs challenging. In addition, I would like to thank my family and friends for their moral support throughout my graduate studies.

Finally, I would like to thank Winston Awadzi, Alan Jacobs, and Joel Winslow for their valuable business development guidance and contagious entrepreneurial spirit. All three of these people were major influences throughout the duration of the project.

Executive Summary

This report documents the procedure and analysis used to investigate an opportunity to orchestrate a buyout of a small technology business unit from Swift. This buyout is unique in that the person contemplating the buyout is also the current manager of the product group. Within this project, the performance history of the business is traced and business problems are identified and analyzed. After a potential for growth is recognized, the ethical dilemmas facing the author are considered as the author contemplates taking his employer's business into the private sector for personal gain.

After ethical issues are resolved, additional individuals are recruited to bring experience, expertise, and financial leverage to the planning process. The key components to implementing the buyout plan are identified, including developing a compelling high-level business plan, determining the level of funding necessary for the venture, and obtaining buy-in from venture capitalists.

Another key component of implementing this buy out plan is obtaining backing from key players within Swift. It is vital that the author is able to effectively communicate a compelling story to Swift executives. The compelling story is that removing the business unit from Swift is not only in Swift's best interest, but that Swift's customers will also benefit from this transaction.

The determination of amount of funding necessary is usually largely dependent on the business plan; however in this case the overhead necessary to operate the business is relatively low in comparison to the salaries the TekNet team. Because of this, one of the major dilemmas for the author is the trade-off between personal salary and equity in the company. Naturally, the higher the required salary is, the higher the funding ratio is, and the less personal equity in the company. Another personal dilemma that is considered is timing, which plays a substantial role in the decision making process.

The personal salary dilemma ends up being a key component of the decision making process, which ultimately concludes to not act on the buy out venture at this point of the author's career.

Table of Contents

Acknowledgements.....	3
Executive Summary	4
Table of Contents.....	6
List of Symbols and Acronyms.....	7
Introduction.....	8
Literature Review.....	11
Procedure and Methodology.....	12
The Swift TekNet IP Product and Market	12
Product Description	12
Market Segmentation.....	18
Technology Changes.....	19
Company Performance.....	20
Company Performance.....	21
Top Five Business Problems & Proposed Solutions.....	24
Conclusion	37
Suggestions for Additional Work	42
 Bibliography	 43
 Appendix A: Product Development Plans	 44
Appendix B: Pending U.S. Patents on TekNet Equipment.....	80
Appendix C: Custom Business Plan Template	81

List of Symbols and Acronyms

- a. RFP : Request for proposal
- b. TekNet : Swift TekNet IP
- c. TekNet factory: The Swift facility and organization responsible for engineering, product development, and manufacturing the TekNet product.
- d. AH-1 : Administrative Headend
- e. AH-2 : Administrative Headend, 2nd generation
- f. AH-3 : Administrative Headend, 3rd & current generation)
- g. DH-1 : Distribution Headend
- h. DH-2 : Distribution Headend, 2nd generation
- i. DH-3 : Distribution Headend, 3rd generation
- j. Swift SBS : Swift Business Solutions
- k. Swift BMO : Swift Business Markets Organization
- l. Swift LTD : Swift Local Telephone Division
- m. K-12 : Kindergarten through grade twelve
- n. VOD : video on demand
- o. VRB : Video Rebroadcast
- p. dVRB : Digital Video Rebroadcast
- q. Admin : Administrative Headend software
- r. RSMC : Resource Scheduling & Media Control Software
- s. MA-4: Media Automator (4-channel)
- t. IRPP: Infra-red Patch Panel
- u. ADR: Serial interface module
- v. ERate: government subsidizing program for K-12 schools
- w. IP : Internet Protocol
- x. TekNet: Swift TekNet IP ®
- y. Swift: Swift Corporation ***USE CODE NAME***
- z. AH/DH/etc

Introduction

Swift TekNet IP is a unique business unit within Swift that develops, manufactures, supports, and sells proprietary technology tools to the K-12 education market. A similar product for the home market is the “Smart Home” systems. These integrated hardware and software devices allow control of a school’s bells, alarms, video distribution, energy management, surveillance, etc. over the Internet. This enables school administrators to modify bell schedules or stream video content to the classroom remotely using their desktop browser. For example, many schools today rely on carts with televisions and VCR players. Teachers must push the carts from classroom to classroom in order to watch videos. With the Swift TekNet IP system, each classroom is equipped with a television and a computer. The teacher may control playback of a remotely located media device or stream a video file to the televisions using either the classroom PC or telephone as a remote control.

Swift TekNet IP is unique among the many groups at Swift in that the TekNet group designs, manufactures, and supports their own products. In essence, Swift TekNet IP is a stand alone business- an internal vendor whose largest customer is Swift SBS¹. Swift TekNet IP is the only Swift product that is designed and manufactured to this degree in-house.

Swift purchased the TekNet business from a personal entrepreneur in 1991. Before this acquisition, Swift Florida² was successful at reselling the TekNet product, and discovered that TekNet sales opened the door to the sale of additional telephony products and services, such as IP, PBX/key systems, structured cabling, and support contracts.

After Swift’s purchase of the TekNet business, Swift did focus some resources on regional sales and marketing, but invested little in engineering or product development. The product quickly grew obsolete, yet surprisingly, TekNet sales continued to grow at a moderate pace (the K-12 education market has historically been slow to adapt new technology). Swift continued to manufacture the original product design until several

¹ SWIFT SBS: provide business description here & short relationship explanation, i.e. Swift Business Solutions provides marketing and sales channel for the TekNet product.

² Swift Florida

proprietary TekNet hardware devices could no longer be manufactured due to electronic component obsolescence.

At this time, the author was hired by Swift to reengineer the product line so that it could continue producing, selling, and supporting the TekNet equipment, eventually working his way up to Manager of Engineering and Product Development. The author has been a key player in the product development and business strategy for the TekNet product for over six years. At the time of this project, the author had many responsibilities, including the high level business objective to increase contribution income generated by the TekNet product line. The most obvious method to increase contribution income was to increase revenue by increasing sales volume.

Over ninety-five percent of TekNet systems were installed in North Carolina, South Carolina, and Florida. Other areas of the country had not been pursued by the Swift SBS sales force. Noticing promising sales in the few regions where Swift demonstrated only minimal sales efforts, the author strived to increase sales by pushing the TekNet product into additional Swift territories. TekNet was unable to get the sales force to embrace the TekNet product in other regions, even with the demonstrated successes in the southeast. These attempts were not successful primarily due to the shift in Swift's strategic direction; from customer premise equipment (CPE) to Network-based services³. With the shift in strategic direction, it was difficult to persuade the marketing organizations to dedicate promotional resources or even sales incentives.

Frustrated by the unsuccessful attempts at expanding the product's distribution channels, the author continued to investigate other methods to increase the business unit's contribution income to Swift. Because management was unable to adjust sales pricing⁴, and because Swift's shift in strategic direction limited the growth potential of TekNet's distribution chain, the author made the decision to attempt to increase contribution income by lowering the costs associated with doing business.

³ CPE vs. network, and swift's initiatives to deemphasize CPE.

⁴ According to tax law, Swift factory must sell to Swift Sales at actual cost

Several product development proposals were developed and proposed as a means to cut production and support costs for the TekNet product (see Appendix A). It became clear that with little effort, much of the cost and overhead necessary to produce the TekNet product line would be substantially reduced.

While implementing these product development projects, the conclusion was made that even with the reduction in production costs as a result of the new product development projects, without growth in sales volume the TekNet business would not be able to grow to be a successful player within Swift or the educational technology tools niche market⁵. Even though production costs could be cut with product redesigns, the cuts in production costs did not adjust the contribution income enough to make a sizeable difference. With the costs of production and overhead, TekNet had about two million dollars in expenses to recoup each year. Most of these expenses were salaries and overhead. The profit margins on the TekNet systems were actually quite high. Therefore, once the two million in expenses were recouped, a high margin of every additional dollar earned goes to the bottom line.

The solution to increasing contribution income would have to involve increasing sales. The only method to increase sales was to add distribution channels in areas that are not already saturated with TekNet products. The only thing holding Swift TekNet IP back from increasing its distribution channels was Swift itself. At this point the author began to seriously ponder if Swift TekNet IP would be a more financially successful product if it were not part of the large corporation Swift.

In 2004, Swift continued to focus its efforts on Network, and consequently, further deemphasize customer premise equipment (CPE). Swift removed all sales incentive from the TekNet product at this time. The TekNet business was a “dog” within Swift, continuing operations only to support existing sales with support contracts in place.

During this time frame, the author was enrolled in a graduate level class titled “Entrepreneurship for Engineers” within the Engineering Management department at the

⁵ according to “Marketing High Technology” about must be top 10-15% of market to be successful

University of Kansas. This class helped to influence the author to realize that serious consideration should be given to making an attempt to purchase the TekNet IP business from Swift and running it as a private business. As a private business, TekNet would resell not only to Swift but to other resellers and system contractors nationwide.

While meeting with a director responsible for new business development, the director confirmed the author's suspicions that although Swift wanted to maintain relationships with existing TekNet customers, Swift had no intentions on growing the TekNet business. The two professionals both shared the same idea- the idea of running TekNet as a private business, outside of Swift. After several more meetings and studying business development books, the fundamental steps to conducting a successful buyout were identified: develop a high level business plan, obtain buy-in from Swift executives, obtain financing, and perhaps most importantly, move forward at the best possible opportunity.

The objectives of this project are to describe the opportunity to attempt a leveraged buy-out of the Swift TekNet IP business unit, and provide detail on the steps necessary to execute this opportunity. Included in the steps necessary to implement this plan is a high level business plan. In addition, this paper will provide an analysis of the many decision making processes involved in this opportunity. Detailed financial information will not be given due to the sensitive nature of that data.

Procedure and Methodology

The Swift TekNet IP Product and Market

The basic industry of Swift TekNet IP is education. The area of interest is communication, energy management, and media control systems designed specifically for K-12 educational facilities. Specifically, this business involves the engineering, development, and sales of the Swift TekNet IP product.

In 1991, Swift purchased a small company called TekNet. TekNet developed and produced an integrated communication technology product, also by the name of TekNet, for the education market.

The TekNet product was attractive to Swift because it integrated with phone systems and the school's local area network. This drove bundles sales of network and other telecommunications equipment with the sales of the TekNet systems. TekNet was Swift's "Trojan horse", used to penetrate the education market.

After Swift took over TekNet, they continued production and sales, but discontinued engineering, documentation, and product development. Swift made a few half-hearted attempts to update the technology behind the TekNet system, but the result was convoluted and difficult to manufacture, install, and support.

Product Description

The basic product is a web-server-based system that integrates with proprietary hardware. The system enables educators to access and control many of their school's resources from any web browser or telephone. The TekNet system performs many functions, but there are four main features that the reader should be familiar with:

- A. Public Address / Audio Alerts
- B. Video Clocks / Video Bulletins
- C. Energy Management
- D. Resource Media Scheduling and Control

A. Public Address / Audio Alerts

Administrators may create and modify bell schedules within the TekNet software. Rather than traditional school bells, the TekNet system plays .wav files from the TekNet server and delivers the sound to specified zones. Because the tones and bells are based on ordinary .wav files, any recorded sound may be used as a scheduled bell. For instance, many schools use prerecorded announcements or school mascot sound effects in lieu of ordinary bell sounds.

Educators may also schedule and track the usage of school resources such as conference rooms, media devices, and practice fields.

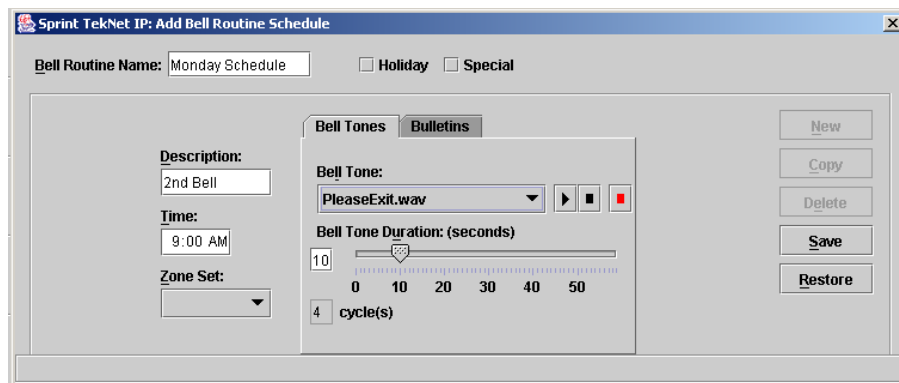


Figure 1. Creating a TekNet Bell Schedule

B. Video Clock/ Video Bulletins

The TekNet system displays video clocks on the school's televisions when they are not in use. The clock background images may be imported. Many schools prefer to use the school's mascot as a clock face.



Figure 2. The TekNet Video Clock

C. Energy Management

The TekNet system gives the faculty the capability of controlling power on / off of televisions, lights, or virtually any other electronic or infrared controllable device.

Typical customers will schedule all of their televisions and lights to turn on at 7:00am and turn off at 5:00pm. The purpose is to cut electricity costs, keep the night crew from watching television, and to be able to address the students via video announcements the morning of every school day. In a similar manner, lighting is controlled by relays, which are activated by the TekNet server. Televisions are controlled via infrared signals generated by a proprietary electronic component (MA-4), which is in turn controlled by the TekNet server via TCP/IP.

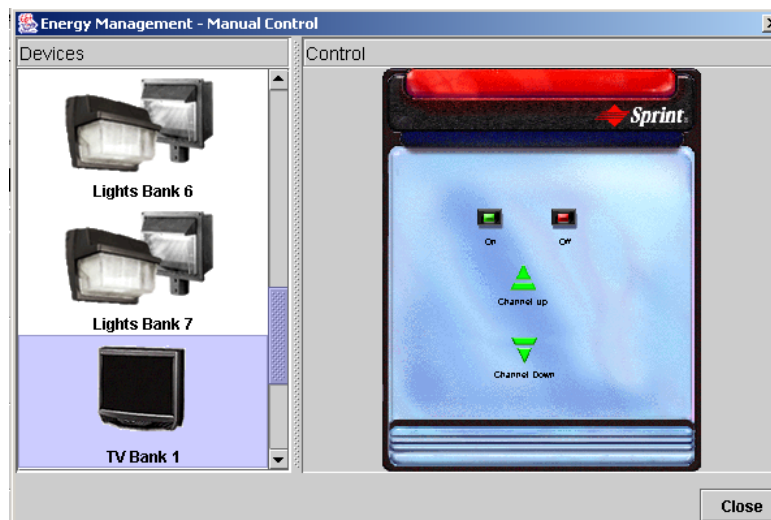


Figure 3. Energy Management User Interface

D. Centralized Media Distribution and Control

The TekNet system allows the teachers and students to access and control centrally located media devices (such as DVD players or VCRs) from their desktop browsers.



Figure 5. Media Control User Interface

All of the mentioned features shall be categorized as an ‘integrated communications and media control system’ for the sake of this marketing plan.

Customer Needs Fulfilled

Every K-12 school needs Swift TekNet solutions such as public address, bells and clocks. Swift TekNet is Swift BWM’s Trojan horse into the education market by providing a turnkey solution for schools. Swift provides a one-stop shop for voice, video, and data to the education customer using Swift TekNet as the solution that ties it all together. Swift provides the expertise with engineering, product, installation, and service.

Typical customers are public and private K-12 schools. Every K-12 school has the need for synchronized clocks, bells, energy management, public address, and media distribution and control.

K-12 facilities need public address systems to make announcements to students and faculty in all areas of the building. Bells are necessary for class period changes. Tones and alarms are useful for emergency drills.

Customers need synchronized clocks to keep students and faculty punctual and on the same schedule. Video clocks displayed on the televisions actually save money, because it is no longer necessary for hardwired synchronized clocks in each classroom. Video bulletins are also used for emergency drills and classroom communications.

Schools need centralized media distribution and control as a convenience factor. Centralized media control eliminates the need for teachers to push awkward audio-visual carts from room to room. In TekNet schools, each classroom is equipped with a television, and the teacher accesses centrally located media devices remotely from their PC.

It takes teachers a minimum of ten minutes to set up a video presentation with traditional media equipment. Teachers must walk to the media center, wheel a cart back to their room, set up the TV and VCR, and return the cart when finished.

Even if a district's 1,800 faculty members played only one video tape a year, the district is losing 300 hours of instructional time every year. With Swift TekNet IP, teachers simply push buttons on their telephone handset to access and control a videotape or DVD. This time saving features adds hundreds of hours each year to devote to students and lesson plans.

The energy management portion of the TekNet product fulfills the customer's need to control when televisions and lights are powered on and off.

Schools purchase their communications systems from TekNet because they like the convenience of purchasing an integrated system from one company, rather dealing with several different companies and systems. Another selling point of the system is that

Swift has specialized government /education sales support specialists who help schools get E-Rate funding for the TekNet system. With E-Rate funding, the U.S. government will pay for up to 85% of the TekNet system, making the actual cost to the school less substantial.

The biggest need of the customer is a communications/ media control system that is maintenance free and transparent to the user. Swift sells maintenance contracts as a value added service, and many systems are sold because of Swift's widely recognized name and the company's excellent reputation as an innovative technology leader.

Markets in the Industry

Integrated educational communications systems are sold to schools through dealer networks. Typical dealers for competitor's products include low voltage cabling and fire alarm/security contractors. Swift sells the majority of TekNet systems through Swift's internal specialized education workforce and a small percentage through a non-affiliate dealer network.

The sales cycle for this type of technology product to schools is long, about one year on average. This is due to the E-Rate government funding that the schools must apply for and the bidding process, which is mandatory for most government funded projects. Also, many new customers are schools which are beginning the construction phase, and the sales cycle follows the design/build phases of the school facility.

The drivers for Swift TekNet are bond money for new construction and retrofits and E-Rate funding for telecom services and equipment. A key factor of sales is dedicated and experienced sales people and sales specialists in the education market.

Swift TekNet is in a very competitive marketplace, with downward pressures on pricing because of the bid process. Therefore the TekNet development team and product development team should strive to provide more value at lower cost. The key to success is to manage the bid process, so the competitors have to significantly reduce their margins to compete.

Market Segmentation

The market for integrated communications and media control systems is segmented by type of user. Large and medium size corporations utilize high-end video streaming systems for their media retrieval systems. Video streaming is defined as digitizing analog video, compressing the resulting data (usually with an MPEG algorithm) and transmitting the resulting data as Ethernet packets across the network. These systems are very expensive to purchase and maintain. In addition, the facility's network must be very robust in order to handle the bandwidth necessary for video streaming. The business sector does not typically have a need for bells or tone systems. Generally these types of facilities utilize PBX or key systems as their primary communications system.

Collegiate level facilities also rely on video streaming for their media control and distribution needs. Medium and large size college campuses typically have the funding and network to implement a video streaming solution.

Smaller college campuses such as junior colleges may be considered as candidates for the TekNet system, but some rework would need to be done to the TekNet GUI (graphical user interface) before TekNet could be marketed to a post-high school institution. This is because the TekNet GUI was designed with a cartoon-like user interface that was designed for grade school teachers.

K-12 facilities are perfect candidates, due to the types of media presented in these classrooms, and the limited funds of the schools.

Market Size

i) Ultimate Market

The ultimate market for Swift TekNet IP would consist of every educational institution in the United States (the TekNet product is limited to the United States due to federal export regulations on the electronics)

ii) Intermediate Market

The intermediate market would consist of all new and existing K-12 schools.

iii) Feasible Market

The feasible market is 50% of all new construction k-12 schools and 10% of all existing k-12 schools (as upgrades or replacements to their current infrastructure).

The market size is directly related to the number of new k-12 school facility builds.

Expected Growth

E-Rate funds for 2005 were \$3.2 Billion, available to the K-12 market for telecom services, Internet services, and equipment. Most of Swift TekNet is E-Rate eligible for funding in the equipment category when bundled with network and leasing in the telecom category. The funding can be from 20-90% from the E-Rate funds.

Over \$20 billion will be spent on new public school construction in 2005, and this build rate is expected to continue in 2006⁶ reported \$14.8 Billion for new school construction and renovations in year 2002/2003. Forecasting approximate spending over the next several years. Performing a cost comparison of a school's construction cost to the cost of a TekNet, it equates to \$104 million opportunity nationwide for the TekNet product.

New school construction in Swift Business Wholesale Markets territory is estimated at \$4.6 Billion. This equates to approximately to \$31.5Million in TekNet sales opportunity. Over the next five years, it is expected that new school growth will continue at a constant rate, and schools will invest a higher percentage of the entire school's construction costs on technology and communications infrastructure.

Technology Changes

The biggest threat that technology changes will have on the sales of the TekNet system over the next five years is the increasing popularity and feasibility of video on demand

⁶ 2005 New School Construction Report, <http://www.peterli.com/global/pdfs/SPMconstruction2005.PDF>

systems. Video on demand systems will eventually make the centralized media control and retrieval features of the TekNet system obsolete.

As schools continue to build bigger and better local area and wide area networks, and as the cost of high-density storage devices and microprocessor power continue to drop, video on demand systems will become an attractive alternative to TekNet media retrieval.

Over the next five years, the impact of video on demand systems on the TekNet sales will be negligible; because even schools that do implement video on demand systems will still need backwards compatibility with traditional media formats (videocassettes and DVD's). It is important to note, however, that it is important for Swift TekNet to develop a streaming video solution for the near future.

No major technology breakthroughs are expected over the next five years with respect to public address, energy management, or synchronized clocks.

Company Performance

The explosive growth of the initial years of the Swift TekNet IP product is partially attributable to the new options that Swift brings to the educational market. In the past, K-12 schools have generally negotiated and purchased their technology infrastructure and video equipment from small companies. These small companies are fragmented in the type of services they offer and therefore integrated sales to schools were difficult to procure and implement. Swift was the first company to provide not only a fully integrated system but also a complete set of communications and support skills never provided in this industry before. The consumer confidence factor is supported by Swift brand name.

Competition

There are two types of competitors in the K-12 integrated systems environment. The primary competitors today are Duane, Rauland Borg, AMX, and Simplex. These companies average around 300 million dollars in combined sales annually and have been in this market for many years. Their primary channel of distribution is through networks

of value added resellers specializing in video and sound or security and alarm systems. Their strengths are based on a large embedded base of customers and a diverse product line ranging from simple overhead projectors to complex integrated systems. These systems provide nearly identical functionality as the TekNet system.

This first group of competitors benefits from and leverages the long-term brand recognition that they have achieved in the educational and professional training environment. Their major drawback is that through the years they have solved many of the schools alert and video needs with separate systems that do not relate to each other. For example, when schools recognized the need for voice communication from the classroom to the administration office most of these competitors created large proprietary intercoms to meet the need. These solutions worked well but it locked schools into proprietary equipment that could not be integrated with other telephone systems. The schools ended up with dual communications systems that would not communicate with each other. These types of sales have been taking place for over 40 years. Therefore, schools have to replace almost every piece of equipment when they upgrade to integrated systems which were introduced about 7 years ago.

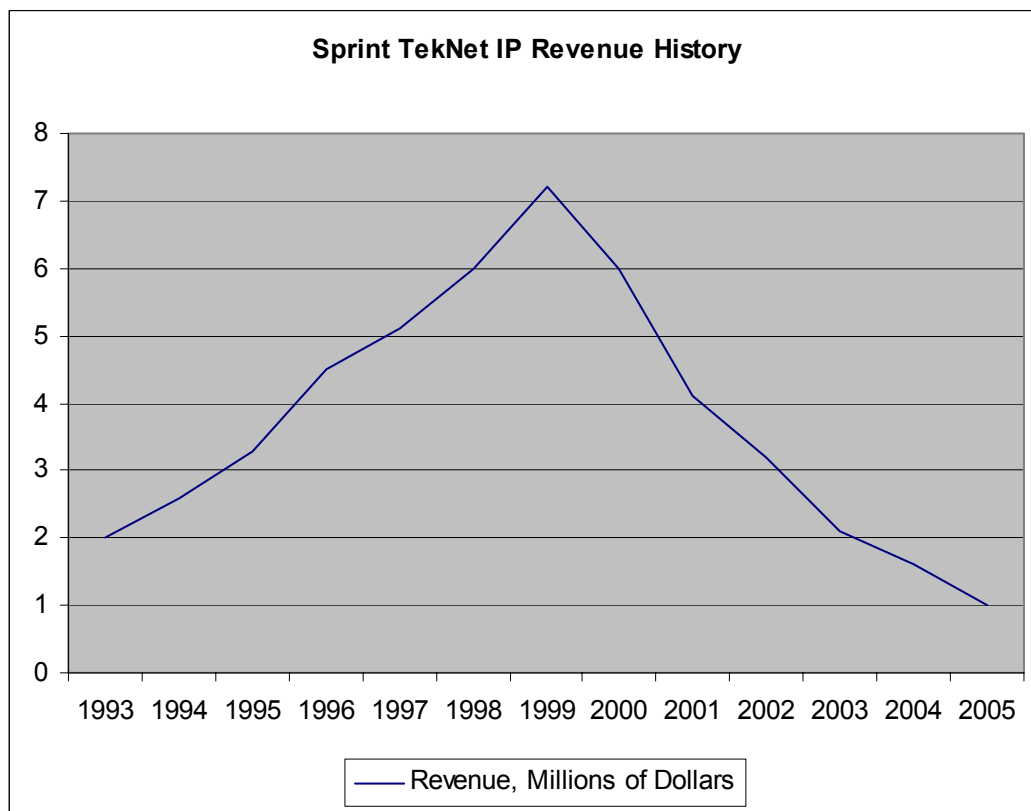
The second group of competitors is the new computer integrators that try to accomplish everything with digital solutions. At the initiation of this project, those solutions were very expensive and beyond the technological ability of most end-users. Companies like EDS, IBM, Vanstar, Tektronics, Safari, etc, are but a few that have been encountered in the educational market. Today, these video streaming solutions are a major threat to the Swift TekNet IP system, due to the adoption of high bandwidth networks within schools and the rapid technological advances in video streaming technology.

Company Performance

From 1992 to 1999, TekNet revenues grew at a consistent rate of about \$1 million per year, with revenue doubling after two years. As school districts in the Carolinas and Florida standardized on the Swift TekNet IP system, sales grew at a steady rate. This continued until 1999, when a Swift discontinued marketing efforts on the product. Another factor in this decline is the saturation of area markets. The initial TekNet

customers who standardized on TekNet eventually installed the TekNet systems in all schools within the districts. Once the districts had outfitted all of their schools with TekNet systems, the customer was saturated, and there was no need for sales of new systems.

After revenue peaked in 1999 and began to decline, the TekNet business relied almost entirely on upgrades, repairs, and new installations in the school districts of the existing customer base. As these school districts matured, the construction of new schools declined, and the revenue became more dependent on support and upgrades of existing systems.



By 2005, the TekNet revenue consisted of almost entirely support, repairs, and upgrades. Because K-12 schools typically keep the bell, public address, and surveillance systems for at least a decade, it is expected that TekNet revenues will hover in the \$1M range, slowly declining at approximately 15% loss per year.

This estimate is a worse-case scenario, assuming that no affiliate sales efforts are made by the parent company.

Seven Year Sales Forecast

	2005	2006	2007	2008	2009	2010	2011
Affiliate Revenue	\$1,620,000	\$1,377,000	\$1,170,450	\$994,883	\$845,650	\$718,803	\$610,982

Typical Revenues (per school)

Total System Sale	System Upgrade Sale	Annual Repair & Return
\$85,000	\$12,000	\$2,000

Swift obtains recurring revenue from TekNet customers through sales of support contracts. Swift BMO receives all of the revenue from these contracts, and Swift TekNet provides unlimited telephone support and hardware repairs for Swift technicians. These revenues compound to create a solid base of about \$600,000 per year minimum expected revenue, by 2011.

Before making a decision on proceeding with the buyout, it was important to review and analyze past successes and losses of the TekNet business. Developing a list of the top five business problems and developing potential solutions was the first step in the procedure. This step was necessary for many reasons, primarily to determine the potential for business success, the cost of realizing that potential, and to lure potential partners and investors.

Top Five Business Problems & Proposed Solutions

Problem Number 1: Organizational Design of the Swift TekNet IP Business

When Swift purchased the TekNet IP business, the decision was made to separate the engineering and production segments of the business, and place this segment under the Swift North Supply organization. This organization within Swift North Supply became known as the “TekNet Factory”, and has its own profit and loss statements. The TekNet factory would sell, at cost, to the Local Telephone Division (Swift LTD). In other words, Swift LTD was responsible for marketing and selling the product. After a sale was made, the local swift department sends a purchase order to the TekNet factory. The TekNet factory then assembles a custom TekNet system, and ships the system to the Swift LTD organization for installation by Swift technicians.

The problem with this organizational design is that because the TekNet factory and the Sales and marketing organization were held within different divisions of Swift, each having its own P&L, there was no incentive for Sales and Marketing organizations to focus efforts on the TekNet product. Similarly, when the TekNet factory had a poor business year, there was no penalty imposed on the Sales or marketing organizations.

(Sales & marketing organizations lack of fiscal responsibility for the TekNet product). I.e. TekNet production may lose money, yet no consequences for the Swift BMO. This results in a conflict of interest. For example, the BMO may push to support and upgrade customer TekNet systems with complete disregard for the financial impact of the support or upgrade on the TekNet production organization.

Swift TekNet IP has operated as a stand alone business within Swift for approximately ten years. The TekNet engineering and manufacturing are under Swift North Supply, which is a division of Swift LTD. This group designs the products, manufactures the products, and is responsible for all product documentation and support. This group has its own profit and loss statement, independent of the Business Market Organization’s financial performance.

Problem #2: Limited Distribution Channels

Swift TekNet IP has two distribution channels. The largest distribution channel is Swift. Swift BMO purchases the TekNet equipment from Swift North Supply, and resells the TekNet product to the K-12 education market. This sales channel accounts for 95% of TekNet sales.

The second distribution channel is TekNet's non-affiliate dealer network. This group of approximately twenty resellers was recruited by TekNet management to sell the TekNet product in regions that Swift does not target. This dealer network channel accounts for less than 5% of all total sales. Because of the low activity level and corresponding low revenue generated from this channel, this analysis will focus on the current Swift distribution channel.

The absence of a strong non-affiliate sales channel only amplifies effects of problem number one, the lack of financial responsibility of the sales and marketing organization for the TekNet factory organization dependent on the Swift BMO organizations focus and success on the TekNet product.

The limited areas in which Swift has had success selling the TekNet product are currently saturated, i.e. most of the schools within these districts already have TekNet systems installed. Naturally, this limits the new sales potential in these areas.

When a Swift TekNet IP system is sold, the total revenue that goes to the TekNet factory averages \$75,000 per school. This is one-time revenue; the only recurring revenue generated by the TekNet sale that goes towards the TekNet factory is the occasional out of warranty parts repair or replacement, about xx% of the original sale per year.

In summary, with limited distribution channels located in saturated markets, and with minimal recurring revenues from existing customers, success is not likely.

Swift BMO, however, receives recurring revenues from the original TekNet sale in terms of support subscriptions. These lucrative contracts are from

Part of Swift BMO's education vertical sales strategy is to capitalize on TekNet's integration with additional Swift products and services. The Swift BMO sales force leverages TekNet as a "Trojan horse", with the expectation of providing additional products and services with the sales of a TekNet system. For instance, the TekNet system integrates with the school's voice and network systems. When Swift sells a TekNet system, typically the total sale also includes a PBX and phone service, network cabling and connectivity, installation, and multi-year support contracts. The pull-through ratio averages four to one. That translates to four dollars of additional revenue for every one dollar spent on TekNet. A typical TekNet sale is approximately \$70,000, so total revenue from a sale centered on the TekNet opportunity is four times the revenue generated from TekNet, or \$350,000.

Problem Number 3: Ineffective Sales Strategy

The typical sales strategy for the TekNet product is to target new schools construction projects that have released Request for Bids (RFP) from architects that specify the installation competitor's systems.

Historically, Swift BMO has provided little in terms of marketing resources or effort for the TekNet product. Because of this, most sales opportunities are in response to a request for proposal (RFP) for a competitor's product. The reseller (Swift or a non-affiliate dealer) submits a bid with TekNet listed as an alternate. Often this requires custom engineering work from the TekNet team, for example increasing the number of public address channels or implementing a required software feature for specific customers. Thus the current sales strategy is a reactive (rather than proactive) one.

The TekNet system is presented as an alternative to the specified system, and the objective is to submit Swift TekNet IP as an alternate bid.

In order to qualify as an alternate bid, the TekNet system must meet certain minimum requirements specified by the architect. Generally, these minimum specifications are listed and provided by the system manufacturer. It is common practice within the industry for the system manufacturer to develop a bid specification that includes a long list of specific features and functionality that an alternate system must be capable of before being accepted as an alternate bid. It is also common practice for the bid specification to include very obscure features in an effort to keep competitor's system out of the bid process.

The competitors' sales strategy is targeted at the architect level, while Swift's sales strategy is targeted at the end customer / general contractor level. Swift's competitors have been very successful by targeting architects by performing system demos and submitting system bid specifications for the architect to use on his or her K-12 projects. Most architects then standardize on the competitor's bid specification, and use it as a template for all future K-12 construction or technology upgrade projects.

This strategy works surprisingly well. This being a technology industry, one would expect that the products and corresponding bid specifications would be constantly updated. Due to the static nature of the K-12 technology infrastructure, this is not the case. Schools want to standardize on technology platforms in order to reduce support and training costs. Another reason for standardization is for political reasons within the schools district: it is important that one school within a district does not stand out or lag behind in terms of technology infrastructure. For these reasons, the bid specifications for the TekNet-like systems have not changed for two decades.

Rather, the overwhelming majority of sales proposals were as alternate bids for competitor's products which were featured in the original architect's design request.

A proposed corrective action for the lack of sales and marketing focus on architects is to include a marketing campaign that targets the architect professionals. One aspect of the campaign is to develop a training class that qualifies for continuing education credits for the architects. This class will focus on technology solutions for the K-12 education

market, including alternative solutions for a school's bells, clocks, surveillance, and video distribution.

The existing sales strategy has been surprisingly successful in the limit regions where Swift demonstrates a minimal sales effort. The areas where Swift sells the TekNet systems are in the Southeast: North Carolina, South Carolina, and Florida. There are currently over 1000 schools with TekNet systems installed in these areas. The success in these areas is mostly due to the sales characteristics of the K-12 market. In order to cut complexity and costs, and to insure equal infrastructure within schools, districts tend to standardize on technology infrastructure. When one school within a district installs a TekNet system, typically all of the schools within the district will eventually standardize on the TekNet system, assuming that the installation went as planned and the customer is satisfied with Swift's support. This explains the density of TekNet customers in the very focused areas of North Carolina, South Carolina, and Florida.⁷

Swift had a successful trial sales campaign for the TekNet product in 19xx. This established a base of installations in a few school districts in the southeast. This customer base grew in time, expanding to include most of the schools within these districts.

Problem Number Four: Demo System Size, Cost & Complexity

Attempts to expand sales were not successful for a number of reasons. One reason is that the sales force did not embrace the product due to the complexity of the system demonstration kit.⁸ The demo kit weighed over 300 lbs, was expensive to ship, and required two strong people to unload and set up. In addition, because of the weight and complexity of the demo system it was common for the system to be damaged in shipping, causing the customer demonstration to fail, indicating a faulty product and causing embarrassment for the sales person. At least two sales people suffered from injuries as a result of unloading or setting up the TekNet demo system.

⁷ Insert U.S. map here with customer locations indicated

⁸ Insert demo manual in appendix

In addition, the demo was expensive to build, over \$4,500 per unit. There were only three built to support the entire Swift sales force. Availability never seemed to be a problem due to the sales force's hesitancy to schedule demonstrations with customers.

If the demo system arrived unscathed and the sales person was able to unload it without causing injury, it required significant computer and electronic knowledge to configure and operate.

The proposed solution to the demo complexity problem is to develop a demo system that is entirely software-based, enabling sales people to load the demo on their laptops. This solution was implemented in 2005. Sales people can now download and install a demo version of the Swift TekNet IP software, greatly reducing the effort necessary to deliver an effect product demonstration.

In addition, the availability of the demo software installation build online means that updates and improvements may be made to the demo software without time and costs necessary for sales people to return their demo kit to the TekNet production facility for an upgrade.

Problem Number Five: Long Sales Cycle

Another reason why this product was not aggressively pursued by the sales force is the long sales cycle involved when selling the TekNet solution. Generally these sales are dependent on government funding and the construction of new schools. Thus, the normal sales cycle for this product is eight to twelve months, in contrast to the one to three months sales cycle time for typical Swift business products and services. This long sales cycle did not work with Swift's sales compensation plans.

The solution to the sales cycle time problem is to continue to migrate the TekNet product towards more of a software platform that is less dependent on the TekNet hardware. The TekNet hardware pushes the sales cycle time due to the expense and timelines involved with purchasing and installing hardware, which usually requires the installation of new

cable runs to the classrooms, thus hardware is not typically added until after the school year.

In addition to the top five problems listed previously, there are many opportunities for improvement of the TekNet business. The first and perhaps most obvious opportunity is in the product itself. Although many improvements have been made during recent years, the product still contains too many components and is unnecessarily complex. The complexity of the product causes problems on many facets of the business. The initial sales demonstration is unnecessarily difficult, as outlined in problem number four: Demo size and complexity.

If the sales demo does go well, product complexity becomes an issue once again when the customer inquires about system configurations and pricing. Due to the complex nature of the product, few sales people are able to field either of these questions. Rather, the sales person must contact the TekNet Factory and get assistance from the TekNet Sales Engineer for custom configuration and pricing information. The turn around time for the custom pricing and configuration information averages three to five days, but may take as long as two weeks during peak periods.

If the sales person manages to keep the customer interested for the duration of the configuration and pricing stage and an order is eventually placed for a TekNet system, the TekNet factory has difficulty on a number of levels producing the requested system. Because of the large number of parts, many of which are from third-party vendors (for example, equipment cabinets, cameras, cabling, adapters, etc.), many parts may no longer be available or may have been replaced by a slightly different product from the same or different manufacturer. In this case, the sales person must go back to the customer and a new purchase order for the modified configuration suggested by the TekNet Sales engineer.

The TekNet Factory keeps a limited amount of each component in inventory. This includes over 3000 individual parts, each with its own part number, vendor, and

documentation. This is a logistical nightmare, especially for a business that sells to such a niche market. This excess inventory adds tremendous cost to the business.

During installation, the number of components adds to the difficulty of installation. During service calls, the extraordinary system complexity creates troubleshooting difficulty and many unnecessary equipment returns as a result.

Appendix A includes several product design engineering proposals for decreasing the complexity of the project (several of these design projects have already been successfully implemented by the time of publication of this paper).

Recognition of Potential for Growth

After analyzing the performance history of the TekNet factory and after identifying and reviewing the top five business issues and proposed solutions, it became clear that there was a tremendous opportunity for growth. Simply expand the distribution to additional regions, using the recurring support and upgrade revenues to help offset the costs of targeting the additional territories.

Working with Swift's Director of New Business Development, this growth potential was identified as an excellent small business opportunity. The director brought this project to executives, but unfortunately did not fit in with Swift's strategic direction, and he was directed not to focus his efforts towards this project.

In a private discussion between the author and this director, the director explained that Swift was not going to dedicate resources to this product, but that the opportunity for growth is evident. Furthermore, he stated that Swift would likely be willing to offload the business, and it would be a great entrepreneurial opportunity for somebody who knew the business and the industry well.

The author (currently the manager of the TekNet factory) and the director decided to work together to see if they could develop a buyout and business plan that was in the best interest of Swift, and was also lucrative for the new business owners.

Ethical dilemmas identified

While investigating this business opportunity, there were some ethical issues that needed to be addressed. First, this project may be considered working on a personal project while on the clock for Swift. The easiest way to insure this ethics issue was eliminated was to agree that all work on this project was to be accomplished outside of normal business hours and off-site.

The second ethical issue that needed to be addressed was, as a Swift employee, was the team working towards personal gain at the expense of Swift? In other words, how does the team proceed with this project keeping Swift's best interest the number one objective? This challenged the author for some time, until the conclusion was made that because this proposal would be presented as an option, and the final decision makers were not involved with the project, there actually is no ethical issue. For instance, Swift may decide to sell the TekNet IP business to a competitor. With the management buyout option on the table, Swift actually has a better position, in that with this proposal they have another option to consider, and which may help with their negotiations.⁹

The key to avoiding any perceived breach of ethics regarding this issue is to plan the proposal as a presentation of options for the struggling business unit. The options will consist of a plan for making the TekNet business successful within Swift, a plan to continue the TekNet business in a limited mode which only supports existing installations, a plan that terminates the business, and a plan that sells the business to an outside company.

Actually, terminating the business completely is not an option, due to the many existing customers who have multi-year support contracts in place. In addition, the many school districts that invested hundreds of thousands of dollars over the past year would be irate that Swift is no longer supporting a product that was sold to them so recently. It would not make sense from a legal or public relations view to exit the business at this time.

⁹ Negotiation tips: BATNA

The largest concern was of perceived breach of ethics. It is not hard to imagine a fellow worker or executive level employee being introduced to this project and considering this to be an attempt of a manager seeking personal gain at the expense of his employer and employees. Therefore, it was determined a high priority to make it crystal clear that the primary goal of this project is to develop a plan for the Swift TekNet IP business that is in the best interest of Swift.

Also, a very large component of the viability of this plan depends on obtaining buy-in from Swift. Any indication of a breach of ethics would not only be detrimental to the project, but also to the careers of the authors and all those involved.

The director and the manager of the TekNet Factory outlined the steps necessary to make the buyout happen. One of the more challenging aspects of this project is developing a strategy to presenting the option of Swift selling the TekNet business to the management team. If the deal did not go through, or was unsuccessful, it is important to the author that he remains gainfully employed within the Swift organization. In addition, from an ethics perspective, it is important to make it clear that the ultimate goal is to present a plan that is in the best interest of Swift. Any indication that this plan is an attempt to take advantage of the company for personal gain will give the impression of unethical behavior. It is most important that during all stages of discussion and notification that it is made absolutely clear that the ultimate goal is to achieve a solution that is in the best interests for Swift and Swift TekNet IP customers.

In order to deliver this impression, it is important to deliver not only a plan for the sale of the business, but also a plan to keep the business within Swift, listing all of the necessary business changes and investments, associated costs, and risks. Also, it was important to have key Swift executives on board with this plan before making a formal presentation of the plan.

The Director of Business Development began running the opportunity by a few of his trusted peers and executives. He managed to build a potential board of directors, including a few key executives at Swift. This was a very important component of the

plan, and one that the manager of the TekNet factory would not have been able to accomplish without the business Director.

Including Swift executives on the board of directors for the new proposed TekNet company accomplished three things. First, it provided the opportunity to have some experienced executive members serving as board members who could provide valuable high level business direction. Second, the fact that executives were behind this project would help win over the decision makers at Swift who were needed to make the final decisions. Third, having these executives from Swift would be valuable moving forward with TekNet's relationship with Swift as a customer.

Next, a business evaluation had to be made to determine what is driving the financials, and how they might be turned around. There are four simple ways to increase revenue. Sell more of the same to the same customer, sell more of the same to new customers, sell something new to the same customer, or sell something new to a new customer.

A way to increase profit is by decreasing expenses. There were two primary expense cutting focal points during this analysis: cost of goods (production costs) and operating overhead type expenses. It was decided to focus on operating expenses first.

An analysis was made of the current TekNet IP operations and corresponding budget to determine where costs could be cut. Many potential budget cuts were easy to identify. When transitioning a business from a large corporation to a small private company, there are many ways to get by with less. Also, as a personal stakeholder in the business, that provides extra incentive to get by with just the bare necessities. Most obvious were the employees. It is very difficult making decisions about which employees should stay versus which employees should be eliminated; especially when you have worked closely with the employees for many years, as is the case with TekNet. A good method to use when in this situation is to refer to jobs by titles rather than names when making the decisions. Letting emotions influence your decision making is poor business strategy.

Within Sprint, the TekNet budget includes wages for nine full time employees, and partial wages for several employees who are shared by other groups with Sprint. For example, the person who is responsible for purchasing within TekNet spends only a portion of his time on TekNet. Therefore, a portion of his wage hits the TekNet budget. Most of these positions are back-office clerical types: purchasing, administrative assistants, accounts receivable, billing, etc. Within the TekNet IP budget, these are listed as:

- 0665 – EF&I BOM/Mfg Support Svc
- 0624 – EF&I Kansas Ops
- 0249 – EF&I Director Ops

	Actual
Headcount	9
Salaries	\$441,631.00
617000 Training	\$3,000.00
621000 Office Supplies	\$3,500.00
622000 Janitor	\$1,200.00
624000 Telephone	\$1,371.00
625000 Fuel	\$750.00
626000 Water	\$100.00
628000 Rent Of Equip-Space	\$89,000.00
629000 Medicine/First Aid	\$1,500.00
634000 Maint Equip/Machine	\$1,500.00
635000 Research and Development	\$74,000.00
641000 Dues and Subscriptions	\$500.00
643000 Miscellaneous	\$4,500.00
644000 Travel-Transportation	\$31,000.00
645000 Auto Exp Budget	\$5,500.00
646000 Packing Supplies Budget	\$2,500.00
653000 Sales Promotion	\$4,000.00
663000 Depreciation Expense	\$600.00
0665 - EF&I BOM/Mfg Support Svc	\$117,414.24
0624 - EF&I Kansas Awt Ops	\$652.00
0249 - EF&I Director Ops	\$5,715.00
Total Operating Expense	\$789,933.24

Outside of a large corporation, many of these clerical type positions will not be necessary, due to the lack of corporate bureaucracy. These expenses were therefore cut from the proposed budget. In addition, items such as office supplies, first aid equipment, anything that wasn't necessary was either cut back or cut out of the budget. The elimination of these three line items alone creates an annual cost savings of nearly \$124,000. This is a substantial cost savings for a small start up business like the proposed TekNet IP business would be. Of course the elimination of headcount and support staff does increase the workload for each employee at the TekNet startup business. This was carefully analyzed by the author and remains a feasible workload for the indicated number of employees to share at the new company. This is listed as one of the disadvantages of taking over this business: there will be more work for everybody, as each team player will be expected to wear many hats and to accept new responsibilities. This is typical for a small business startup.

Another substantial cost savings was in office space rental costs. Swift had recently invested in a multimillion dollar facility for the TekNet IP production that included a \$200k anti-static production floor, shower and locker rooms, executive offices, and a spacious lab with large glass windows for facilitating tours. This space was intended to be a showcase for the company's leading-edge technology and intellectual property. In the real business world, this cost was hardly necessary.

The final proposed budget is compared to the original TekNet budget in the following table. A cost savings of over \$443k was realized with these budget cuts.

TekNet IP Budget- Actual Vs. Proposed

	Actual	Proposed
Headcount	9	5
Salaries	\$441,631.00	\$245,350.56
617000 Training	\$3,000.00	\$0.00
621000 Office Supplies	\$3,500.00	\$1,000.00
622000 Janitor	\$1,200.00	\$100.00
624000 Telephone	\$1,371.00	\$1,200.00
625000 Fuel	\$750.00	\$750.00
626000 Water	\$100.00	\$100.00
628000 Rent Of Equip-Space	\$89,000.00	\$9,600.00
629000 Medicine/First Aid	\$1,500.00	\$100.00
634000 Maint Equip/Machine	\$1,500.00	\$1,500.00
635000 Research and Development	\$74,000.00	\$5,000.00
641000 Dues and Subscriptions	\$500.00	\$100.00
643000 Miscellaneous	\$4,500.00	\$3,000.00
644000 Travel-Transportation	\$31,000.00	\$62,000.00
645000 Auto Exp Budget	\$5,500.00	\$5,500.00
646000 Packing Supplies Budget	\$2,500.00	\$2,500.00
653000 Sales Promotion	\$4,000.00	\$8,000.00
663000 Depreciation Expense	\$600.00	\$600.00
0665 - EF&I BOM/Mfg Support Svc	\$117,414.24	\$0.00
0624 - EF&I Kansas Awt Ops	\$652.00	\$0.00
0249 - EF&I Director Ops	\$5,715.00	\$0.00
Total Operating Expense	\$789,933.24	\$346,400.56
Difference		\$443,533

There are some capital expenditures that will be necessary for this start up, but not a large investment. Only basic office furniture, PCs, and some lab equipment will be required. These capital expenditures are included in the “663000 Depreciation Expense” line item within the budget.

Year One Capital Expenditures

Qty	Description	cost/unit	Extended Cost
5	Laptop Computers (office use)	\$1,000	\$5,000
3	Desktop Computers (Lab use)	\$800	\$2,400
5	Office Furniture Sets	\$925	\$4,625
1	Lab Test Equipment	\$3,000	\$3,000
1	Engineering/Dev Software Tools	\$6,000	\$6,000
Total			\$21,025

After enduring declining sales for over five years, and losses four out of those five years, Swift’s financial plan was to break even in 2005. The expenses listed in the previous

tables represent the 2005 plan to cut expenses enough to equalize anticipated revenue for the year for a break even result. Headcount was adjusted in late 2004 to realize the necessary budget cuts. The resulting headcount is 9 full time employees, as listed in the budget tables.

With the current expenditures and revenues, TekNet is on track to net losses equal to \$397k in 2005. At the current expenditure level, TekNet must generate \$3.26M in revenues before breaking even. This is demonstrated in the table “Break Even Analysis”.

Actuals		Break Even Analysis		Positive Profit Analysis	
	2005		2005		2005
Affiliate Revenue	\$1,620,000	Affiliate Revenue	\$3,260,000	Affiliate Revenue	\$3,260,000
Non-Affiliate Revenue		Non-Affiliate Revenue		Non-Affiliate Revenue	\$2,000,000
Total Revenue	\$1,620,000	Total Revenue	\$3,260,000	Total Revenue	\$5,260,000
Affiliate CoGS	\$1,227,273	Affiliate CoGS	\$2,469,697	Affiliate CoGS	\$2,469,697
Non-Affiliate CoGS	\$0	Non-Affiliate CoGS	\$0	Non-Affiliate CoGS	\$1,515,152
Total CoGS	\$1,227,273	Total CoGS	\$2,469,697	Total CoGS	\$3,984,848
Gross Margin Percentage	32.0%	Gross Margin Percentage	32.0%	Gross Margin Percentage	32.0%
Gross Profit	\$392,727	Gross Profit	\$790,303	Gross Profit	\$1,275,152
Expenses	\$789,983	Expenses	\$789,983	Expenses	\$789,983
Profit Before Taxes	-\$397,256	Profit Before Taxes	\$320	Profit Before Taxes	\$485,169
Taxes (30%)	\$0	Taxes (30%)	\$96	Taxes (30%)	\$145,551
Profit After Taxes (30%)	-\$397,256	Profit After Taxes (30%)	\$224	Profit After Taxes (30%)	\$339,618

An interesting note about this analysis is that after the break even revenue is obtained, all of the fixed overhead costs are paid for, and every additional dollar contributes to a higher net profit percentage.

The following assumptions were made for a six-year pro forma analysis of TekNet operating under the revised budget as a private company outside of Swift. First, the margins on the product would increase steadily until a 45% margin is reached in 2011. The increased margin being a result of moving the product towards a more software-centric application, and the additional product development plans included in the Appendix (Swift has already invested in most of these plans, and all are either ready or nearly ready for production at this time).

In addition, a 15% annual decline in affiliate revenue has been reflected in the pro forma table. This lost revenue is replaced by conservative growth in the non-affiliate market. In 2008, an additional sales person is added, who is responsible for expanding and establishing a new non-affiliate dealer network, with an initial non-affiliate revenue volume of \$250k, with a 35% growth rate per year. This is a conservative growth rate, because there is little if any penetration in all market areas except for the established Carolinas and some parts of Florida.

Pro Forma Analysis	Actual	Forecast					
	2005	2006	2007	2008	2009	2010	2011
Affiliate Revenue	\$1,620,000	\$1,377,000	\$1,170,450	\$994,883	\$845,650	\$718,803	\$610,982
Non-Affiliate Revenue		\$250,000	\$337,500	\$705,625	\$1,199,563	\$2,039,256	\$3,466,736
Total Revenue	\$1,620,000	\$1,627,000	\$1,507,950	\$1,700,508	\$2,045,213	\$2,758,059	\$4,077,718
Affiliate CoGS	\$1,227,273	\$1,020,000	\$848,152	\$710,630	\$595,528	\$495,726	\$421,367
Non-Affiliate CoGS	\$0	\$185,185	\$244,565	\$504,018	\$844,762	\$1,406,384	\$2,390,852
Total CoGS	\$1,227,273	\$1,205,185	\$1,092,717	\$1,214,648	\$1,440,291	\$1,902,110	\$2,812,219
Gross Margin Percentage	32.0%	35.0%	38.0%	40.0%	42.0%	45.0%	45.0%
Gross Profit	\$392,727	\$421,815	\$415,233	\$485,859	\$604,922	\$855,949	\$1,265,499
Expenses	\$789,983	\$346,401	\$363,721	\$486,907	\$511,252	\$536,815	\$563,656
Profit Before Taxes	-\$397,256	\$75,414	\$51,512	-\$1,048	\$93,670	\$319,134	\$701,843
Taxes (30%)	\$0	\$22,624	\$15,453	-\$314	\$28,101	\$95,740	\$210,553
Profit After Taxes (30%)	-\$397,256	\$52,790	\$36,058	-\$733	\$65,569	\$223,394	\$491,290

Conclusion

Once the high level business plan was developed, a financial plan outlined, and financing secured, it was time to make a decision. The high-level plans laid the basic expectations for the kind of return that a business investor could expect from this opportunity. As the author analyzed the opportunity, and what made it attractive, a new argument was made against this investment in career, time, and money. The original attraction to the business was the opportunity: a perhaps once in a lifetime chance to buy a product that Swift had invested millions of dollars in product development costs, at a cost of next to nothing.

However, there are real costs associated with this opportunity. In addition to the expenses associated with purchasing and operating a business, there is the opportunity cost of a career at Swift. The actual decision making process was as follows...

Although this opportunity may be a rare one, how is it differentiated from a start up business in any other industry? The first advantage of this opportunity was that the product, for the most part, had already been developed. Swift invested millions of dollars developing the proprietary hardware and software that became the Swift TekNet IP system. Swift had already invested tens of thousands in legal fees in obtaining United States patents for the many unique product solutions. However, having served as manager of engineering and product development for the product line, the author was intimately familiar with all the limitations of the product design. There was no mystery to the functionality of this product, and the author realized that if necessary, he could develop a similar product technology at a fraction of the cost incurred by Swift. Therefore, the actual value of the opportunity that was contributable to the product development done by Swift was the replacement cost, which was only a fraction of Swift's total product development cost.

The other major attraction to this opportunity was the timing. This business seemed to be a once in a lifetime opportunity. All of the variables were present, and timed with what seemed to be perfect precision that was almost too good to be true. Swift had come to a stopping point in the product development cycle. Swift TekNet IP was finally a dependable product that was easy to produce, and simple to demonstrate, install, and troubleshoot. Maintenance contracts were in place with existing customers, so Swift didn't have much of a choice as to whether or not to continue some form of support for the product. Most importantly, the business had lost money for several consecutive years, and the company had just gone through a large merger and the entire organization was being revaluated and reorganized. Swift had recently shifted its strategic direction away from all customer premise equipment (CPE).

However, during this same period, the author was in an upward mobile career at Swift, was still learning a tremendous amount on the job, and Swift was subsidizing all of the author's education. In addition, the author was in the middle of a home renovation project, which would require at least another year of time and effort before being at a point to where the house could be sold for a profit.

Risk aversion and ease of implementation were also important factors to consider in this decision making process.

Ultimately, the timing advantages of the Swift TekNet IP opportunity were neutralized by the timing disadvantages of the author's current life situation. A decision matrix was generated and proves useful in coming to a conclusion. Each criterion is weighted between 1 and 3, with three being the most important criterion. The ultimate decision is presented in the decision matrix table below, which was not to pursue the Swift TekNet IP buyout project further.

Criterion	Weight	Buy	Value	No-Buy	Value
Risk Aversion	3	1	3	5	15
Personal Growth	2	5	10	4	8
Ease of Implementation	2	2	4	5	10
Benefit / Cost Relationship	3	3	9	5	15
Opportunity for Personal Wealth	2	4	8	2	4
Total Rating			34		52

The significance of this project is exploring a desire that many managers have, yet is seldom acted upon: to own the company that they are the most intimate with and employed by. This project demonstrated the utilization of knowledge gained throughout The University of Kansas Engineering Management program to investigate a real-world entrepreneurship opportunity involving the buyout of a technology driven company currently owned and operated by Swift. Had this opportunity come at a time when risk aversion is not as highly weighted as it currently is for the author, the final decision may have been to carry forward with the buyout.

Suggestions for Additional Work

The inclusion of the detailed financial analysis used throughout the buyout project would have been beneficial to the readers. This was beyond the scope of this project, primarily due to the sensitive nature of the financial aspects of this company.

Additional work might also include detailed analysis of a competitor's business, and analyzing the revenue generated as the technology trends shift to digital video solutions.

Bibliography

Rickertsen, Rick. *Buyout: The Insider's Guide to Buying Your Own Company*. New York: Amacom , 2001.

Carey, Dennis C., and Marie-Caroline Von Weichs. *How to Run a Company*. New York: Crown Business, 2003.

Burstiner, Irving. *The Small Business Handbook*. New York: Simon & Schuster

DeMatteis, Bob. *From Patent to Profit*. New York: Avery Publishing Group

Dell, Michael. *Direct from Dell*. New York: HarperCollins Publishers, Inc.

Appendix A: Product Development Plans

PROJECT JUSTIFICATION:

1. THE ADMINISTRATIVE HEADEND

CURRENT MODEL (AH-2)

The Swift TekNet AH-2 IP consists of two Microsoft Windows NT servers enclosed in a 61" rack, along with several miscellaneous peripheral devices necessary for operation. An NT server requires a network administrator to maintain; many schools do not have this resource. This product was designed to be utilized by librarians and grade school teachers, not network administrators.

Figure 1. is a diagram of the fully assembled AH-2 system. The unit weighs over 275 lbs. and has a production cost of \$[REDACTED]. The rack is assembled and tested at the **Swift Media Integration Facility (SMIF)**.

Figure 2. is a cabling diagram of the AH-2 system. Over 80 electrical connections must be made at the SMIF. The system is difficult to maintain and troubleshoot, due to the high number of possible points of failure.

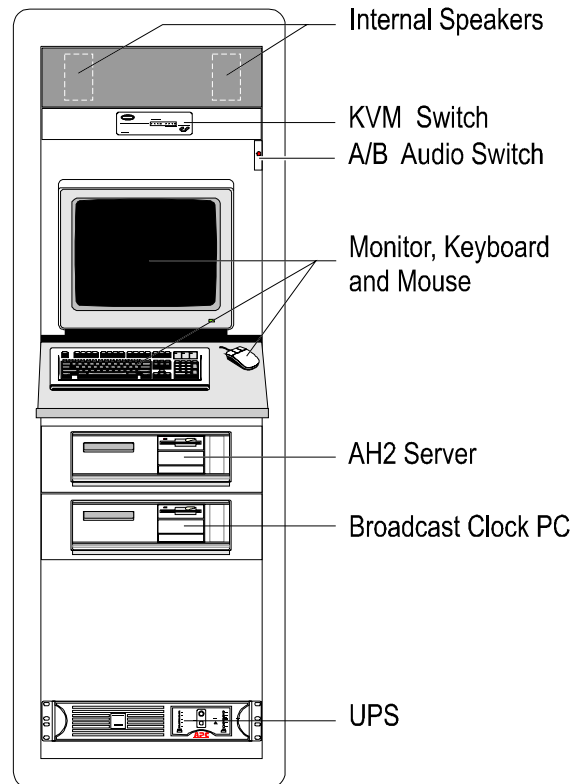


Figure 1. TekNet AH-2 IP

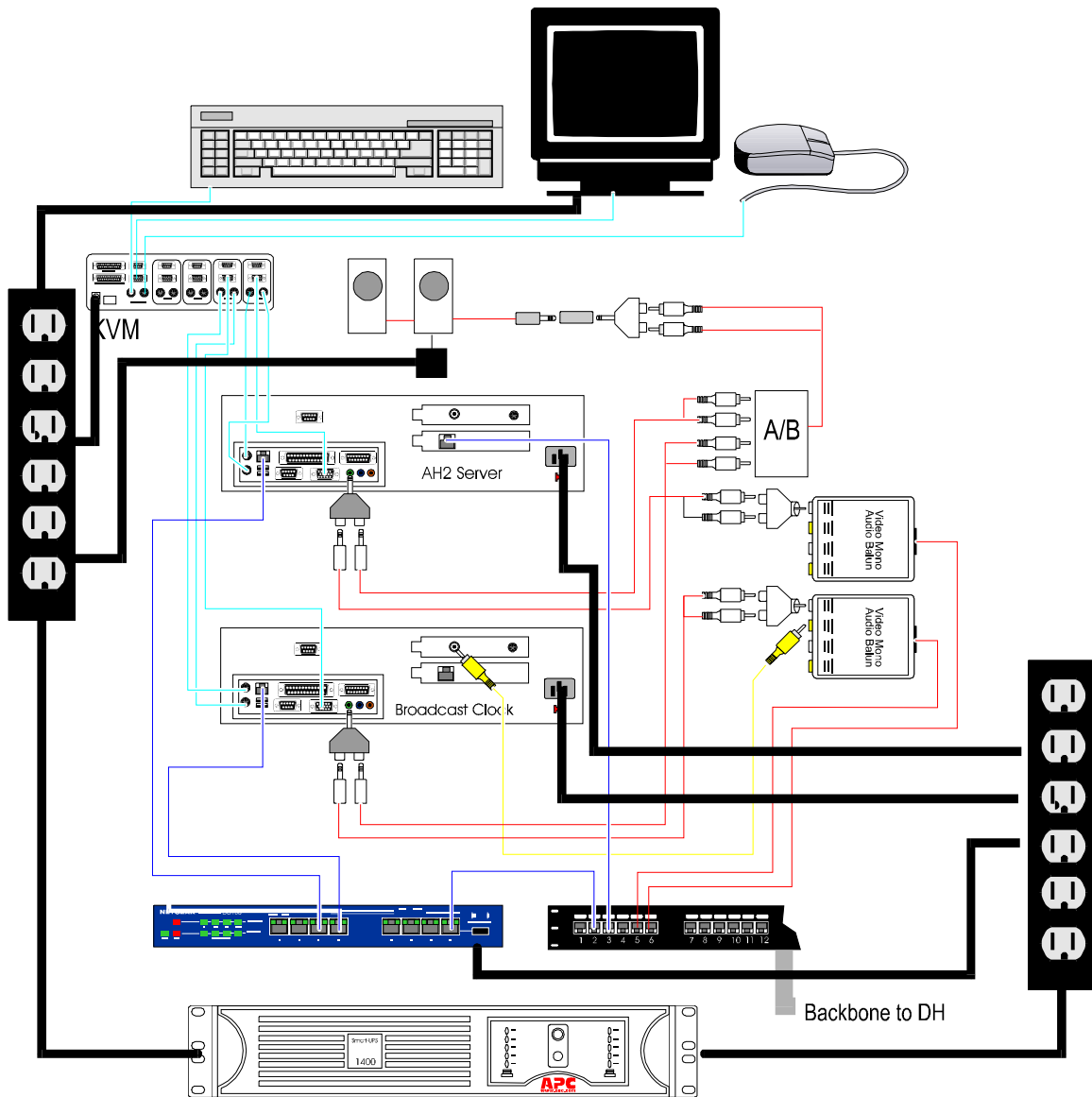


FIGURE 2. AH-2 Component & Cabling Diagram

PROPOSED MODEL (AH-3)

The proposed AH-3 development project includes the migration of the two NT servers of the AH-2 into one network appliance. The estimated production cost, **including amortized development costs**, is \$ [REDACTED]/unit. This correlates to a 74% reduction in production cost from the AH-2. See Appendix A for a detailed AH-2 and AH-3 cost comparison and justification.

The AH-3 appliance will reduce costs further by hosting the TekNet SV Surveillance and TekNet Schedule & Control in addition to the TekNet AH. This will enable the SMIF to ship, receive, and support just one PC hardware configuration, rather than three.

Figure 3. is a diagram of the fully assembled AH-3 system. Figure 4. Is an AH-3 component and cabling diagram.

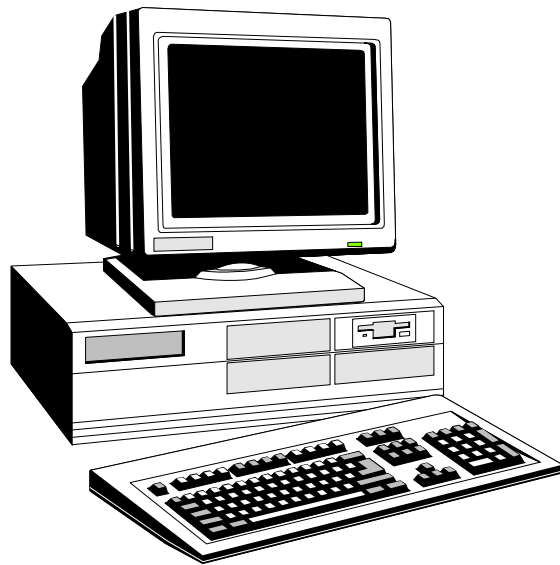


Figure 3. TekNet AH-3 IP

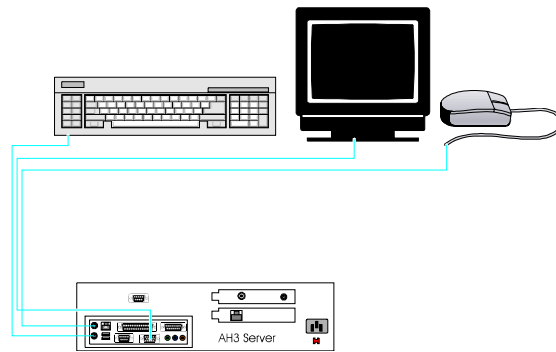


Figure 4. AH-3 Component and Cabling Diagram

2. THE DISTRIBUTION HEADEND

CURRENT MODEL (DH-2)

The distribution headend manufactured and incorporated into the TekNet system currently consists of components and technology designed in the late 1980's. It is imperative to upgrade the headend because the electronic components are obsolete and many are no longer in production, making manufacturing difficult and expensive. Customer demand for more features, lower cost, increased reliability, as well as simpler installation and maintenance are key drivers for the redesign of this portion of the TekNet system.

The current design of the distribution headend was identified as the number one priority for attention by the marketing and design team.

The current Swift TekNet DH-2 consists of several electronic devices mounted on backboards. Many of the devices are designed and manufactured by Swift TekNet; others are off the shelf products manufactured by third parties. The DH-2 is assembled and tested at the SMIF. Hundreds of electrical connections must be made during

production and installation. The high number of possible points of failure makes installation and troubleshooting of the DH-2 extremely difficult. Figure 5. is a diagram of the eight-zone version of the DH-2. The production cost on the eight zone DH-2 is \$4[REDACTED] Figure 6. Is a diagram of the sixteen-zone version of the DH-2. The production cost of the sixteen zone DH-2 is \$[REDACTED].

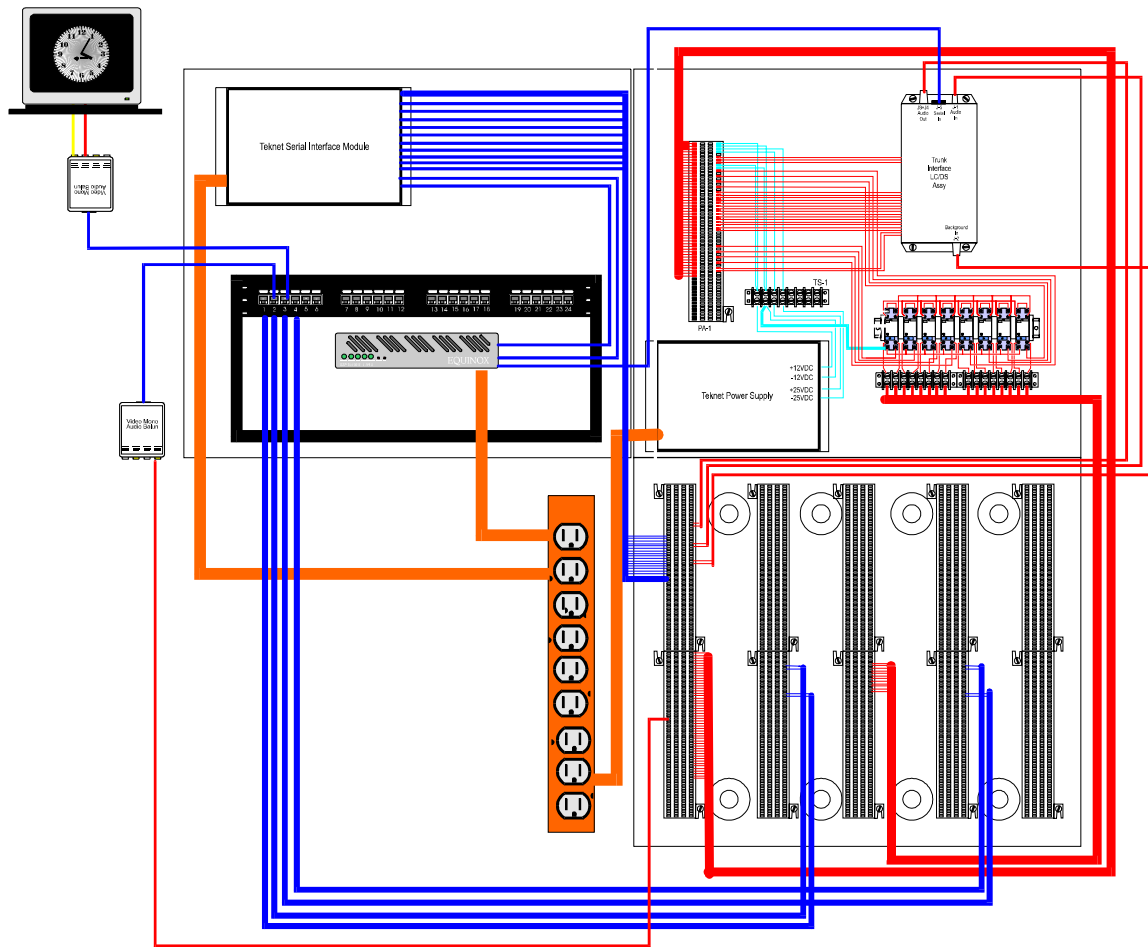


FIGURE 5. Eight Zone DH-2

FIGURE 6. Sixteen Zone DH-2

PROPOSED MODEL (DH-3)

The Proposed DH-3 development project involves replacing all of the existing DH-2 electronics and associated cabling with one integrated electronic module. The estimated production cost, including amortized development costs, is \$[REDACTED] per unit. This is a 68% reduction in production cost from the comparable 16 zone DH-2. See Appendix B for detailed cost comparison and justification.

Figure 7. is an illustration of the proposed DH-3. The installation has been simplified to two connections. See Appendix C for detailed engineering specifications.

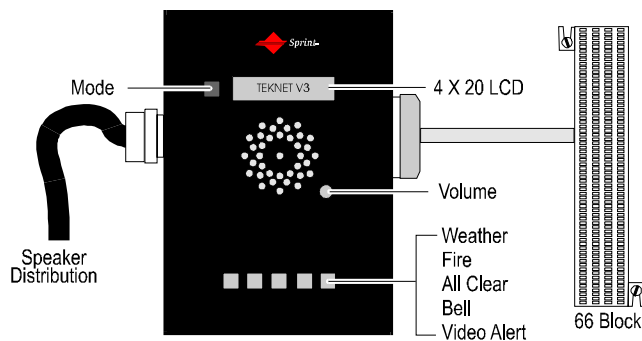


FIGURE 7. Proposed DH-3

Benefits/Risks:

Benefits: The DH-3 will be less expensive to produce, assure reliability and eliminate maintenance calls thereby increasing customer satisfaction with the product. The combination of lower costs and enhanced features will increase product marketability; in turn increasing margins and profits for Swift.

Risks: If the distribution headend is not modernized production will be impossible, the result of component obsolescence, within 24 months. During that period the cost to locate and purchase components no longer manufactured will drive the manufacturing costs higher forcing price increases and reducing the marketability of the product.

Detailed AH-2/AH-3 Cost Comparison and Justification

AH-2 Bill Of Materials

Routing Cost This Level:

\$



118D5419	IP AH RACK 61" GENERIC D-605-419	
323N2718	AH2 DOCUMENTATION PACKAGE	
110N2857	AH2 CELERON PROCESSOR W/DUAL NIC,	1
110N2858	BCC CELERON W/SINGLE ON-BOARD NIC	1,
110N2860	MS WHEEL MOUSE 2 BUTTON PS2 BEIGE	
123N2502	Rubber Bumper .10 X .40 Mouser	
110N2861	KEYBOARD PS2 101/102 SPACE SAVING	
500N2716	AH2 SERVER HASP KEY	
110N2723	AH2 MONITOR, 14" VGA Q41 OPTIQUEST	
122N0003	Filler panel 3.5x19 blk SB-2 (12 PER PKG)	
122N0007	Filler panel 7x19 blk SB-4-CP6 (6 PER PACK)	
130N2668	VTF3 MIDDLE ATL	
112N2812	Online PC Headset	
112N2813	Headset Storage	

Calculated Average Cost of AH-2 BOM:

\$

AH-3

The expected life cycle of the AH-3 is five years. A conservative sales forecast predicts the sale of 600 systems over these five years. Recovering the development costs will be accomplished in three years.

AH-3 DEVELOPMENT COSTS

SBIS: 976 HOURS @ 81.80/hr

\$ [REDACTED]

DVLPMT HARDWARE MISC

TOTAL AH-3 DEVELOPMENT COST \$ [REDACTED]

Ammortizing the expected development costs of \$ [REDACTED] over three years and 360 systems generates a \$ [REDACTED] development cost per unit.

$$\frac{\text{Development Cost}}{\text{\# Systems During Life Cycle}} = \frac{\$85,736.80}{360 \text{ units}} = \$238.16 / \text{unit}$$

110N2857 AH2 CELERON PROCESSOR W/DUAL NIC,

\$ [REDACTED]

110N2860 MS WHEEL MOUSE 2 BUTTON PS2 BEIGE

[REDACTED]

110N2861 KEYBOARD PS2 101/102 SPACE SAVING

[REDACTED]

110N2723 AH2 MONITOR, 14" VGA Q41 OPTIQUEST

AMMORTIZED DEVELOPMENT COST

Total AH-3 BOM

\$ [REDACTED]

	Bill of Materials	Overhead	Warranty	Total Production Cost	% reduction
AH-2	\$ [REDACTED]	\$2,572.56	\$157.34	\$ [REDACTED]	
AH-3	\$1765.97	\$264.90	\$52.98	\$2,083.84	73.87%

Detailed DH-2/DH-3 Cost Comparison and Justification

DH-2 16 Zone Bill of Materials

Routing Cost This Level

\$ [REDACTED]

118D5407 PRIMARY DH BACKBOARD D-605-407

1,073.37

118D5410

VALCOM 4 ZONE CONTROL

BACKBOARD D-605-410

1,038.94

118D5411

VALCOM 4 ZONE INTERFACE BACKBOARD D-605-411

88.34

118D5413	VALCOM 12 ZONE CONTROL BACKBOARD D-605-413
359.02	
118D5414	VALCOM 12 ZONE INTERFACE BACKBOARD D-605-414
74.74	
110N2640	EXPANSION UNIT V-2925A
592.00	
110N2642	BATTERY BACKUP VPB-260
624.00	
110N1615	Amplifier broadband RF Blonder Tongue ACA-30-550
110.00	
350N1616	Phone memory w/ pause button Premier Series 7030 M/C 476005
17.12	
110N2643	DYNAMIC DECK PAGING V-400
57.41	
110N2644	MIC ADAPTER V-9939A
55.20	
112N2661	24V POWER SUPPLY 12 SPEAKERS VP-624
31.20	
170N2798	SWITCH SPST ON-OFF META GC35-458
8.20	
122N2799	WALL PLATE FOR BNC&TNC AIM27-8478
2.00	
122N2800	HI PROF BOX KIT IVORY 3M800I-HB
4.47	

Calculated Average Cost of BOM (including labor):

\$ [REDACTED]

DH-2 8 ZONE Bill of Materials

Routing Cost This Level:

\$ [REDACTED]

118D5407	PRIMARY DH BACKBOARD D-605-407
[REDACTED]	
118D5406	25 VOLT PAGING BACKBOARD D-605-406
[REDACTED]	
118D5409	25 VOLT PAGING DISTRIBUTION BACKBOARD D-605-409
[REDACTED]	
122N1805	Shelf wall mount for PA Amp MID-ATL WMS-20
51.11	
110N1615	Amplifier broadband RF Blonder Tongue ACA-30-550
110.00	
119D5418	HOT MIC ASSEMBLY D-605-418
185.97	

350N1616	Phone memory w/ pause button Premier Series 7030 M/C 476005
17.12	
170N2798	SWITCH SPST ON-OFF META GC35-458
8.20	
122N2799	WALL PLATE FOR BNC&TNC AIM27-8478
2.00	
122N2800	HI PROF BOX KIT IVORY 3M800I-HB
4.47	
204D5436	25 VOLT PAGING CABLE ASSY.

Calculated Average Cost of BOM (including labor):
\$

DH-3 16 Zone Bill of Materials

The expected life cycle of the DH-3 is five years. A conservative sales forecast predicts the sale of 600 systems over these five years. Recovering the development costs will be accomplished in three years.

DEVELOPMENT COSTS

ELAB: 653 HOURS @ \$60/hr

\$

DVLPMT HARDWARE MISC

TOTAL DH-3 DEVELOPMENT COST

\$

Ammortizing the expected development costs of \$44,180.00 over three years and 360 systems generates a \$122.72 development cost per unit.

$$\frac{\text{DevelopmentCost}}{\text{\#SystemsDuringLifeCycle}} = \frac{\$44,180}{360\text{units}} = \$122.72 / \text{unit}$$

122N1805 Shelf wall mount for PA Amp MID-ATL WMS-20 \$
 51.11
 110N1615 Amplifier broadband RF Blonder Tongue ACA-30-550
 110.00
 119D5418 HOT MIC ASSEMBLY D-605-418
 185.97
 350N1616 Phone memory w/ pause button Premier Series 7030
 17.12
 170N2798 SWITCH SPST ON-OFF META GC35-458
 8.20
 122N2799 WALL PLATE FOR BNC&TNC AIM27-8478
 2.00

DH-2 Distribution Backboard



DH-2 Electronic Paging Unit
 AMMORTIZED DH-3 DEVELOPMENT COST
TOTAL DH-3 BOM

\$
 \$

	Bill of Materials	Overhead	Warranty	Total Production Cost	% reduction
DH-2 8-Zone	\$	\$1,307.36	\$79.96	\$	
DH-2 16-Zone		\$2,033.70	\$124.39	\$	
DH-3 16-Zone	\$	\$658.48	\$40.27	\$	67.62%

DH-3 SPECIFICATIONS

There are three primary functions of the TekNet public address module: public address, energy management, and emergency tone generation.

PUBLIC ADDRESS

Audio Routing

The public address system shall be capable of routing any ONE of five audio signals to a single line level audio output. Four of the five audio sources will be generated from external sources. The Emergency Tone audio must be generated from an internal voltage controlled oscillator.

The line level audio output will feed an external power amplifier, which is not part of this system. The speaker level audio output from the power amplifier will be routed back to the public address module, where the signals are routed via relay bank to the active speaker zones.

The PA will also consist of (16) internal paging zone relays. The system will be able to activate/deactivate any combination of the (16) zone relays. LED indicators must be featured for each active paging zone relay. Figure 1. Is a functional diagram of this portion of the public address system.

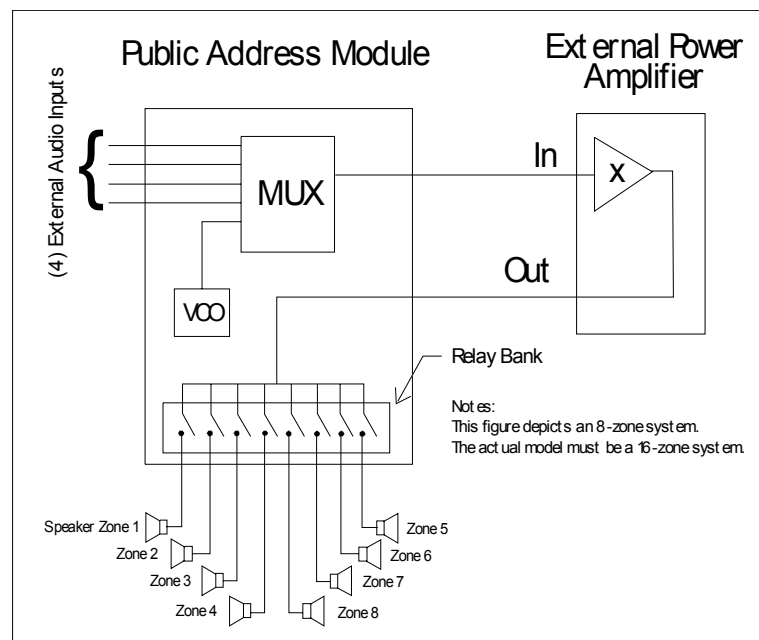


Figure 1. Functional Diagram

AUDIO INPUT SPECS

1. Hot Mic audio input (balanced –60dB Low-Z signal)
2. Emergency Tones (generated from internal Voltage Controlled Oscillator)
3. PC audio input (.wav file generated from PC soundcard. Unbalanced, -10dB Hi-Z signal)
4. Hot Phone audio input (typical telephone 600Ω)
5. Background Music (audio out from typical consumer CD/tape deck, unbalanced, -10dB, 600Ω)

AUDIO INPUT PRIORITIES

The priorities of the audio input are dependent on the state of the HOT MIC INTERRUPT and the PAGING ##. The Hot Mic Interrupt is an external dry contact type push button. The Paging ## is an option the user has while accessing DTMF control.

W/ Hot Mic Priority Interrupt INACTIVE and Paging ## INACTIVE

1. Emergency Tones
2. PC Audio (.wav files)
3. Hot Mic
4. Phone input
5. Background Music

W/ Hot Mic Priority INACTIVE and Paging ## ACTIVE

1. Phone input
2. Emergency Tones
3. PC Audio
4. Hot Mic
5. Bkgnd Music

W/ Hot Mic Priority Interrupt ACTIVE and Paging ## INACTIVE

1. Hot Mic
2. Emergency Tones
3. PC Audio
4. Phone Input
5. Background Music

W/ Hot Mic Priority Interrupt ACTIVE and Paging ## ACTIVE:

1. Phone input
2. Hot Mic
3. Emergency Tones
4. PC Audio
5. Background Music

HOT MIC PRIORITY	0	0	1	1
PAGING ##	0	1	0	1
1	EMER. TONES	PHONE INPUT	HOT MIC	PHONE INPUT
2	.WAV BELLS	EMER. TONES	EMER TONES	HOT MIC
3	HOT MIC	.WAV BELLS	.WAV BELLS	EMER TONES
4	PHONE INPUT	HOT MIC	PHONE INPUT	.WAV BELLS
5	BKGND MUSIC	BKGND MUSIC	BKGND MUSIC	BKGND MUSIC

DTMF CONTROL

The PA system must be controllable from both DTMF and from a private Ethernet connection from a PC. All commands both from the Ethernet connection and DTMF must be echoed back to the PC. A confirmation must be sent back to the PC after every state change.

EMERGENCY TONES

The system will be able to generate tones from 4 simple preset sequences of 6 different frequencies. These tone sequences will be triggered from 4 interrupt-on-change push button inputs.

The audio generated from the tone generator shall be routed to the E TONES input on MUX1. (See Appendix D)

Upon activation/deactivation of interrupt input, all 16 paging zone outputs will be activated/deactivated, and confirmation will be sent to PC. Thus, the activation of an emergency tone interrupt will route the tone sequence through all 16 speaker zones.

(7) LED indicators will be featured, one for each active interrupt

ENERGY MANAGEMENT

The energy management system will be capable of activating/deactivating any combination of (8) 12V 100mA outputs, used to trigger external relays (not part of this system).

The PA system shall be controllable via DTMF and ethernet TCP/IP commands from a PC. All commands, both serial and DTMF must be echoed back to the PC. A serial confirmation must be sent back to the PC after every state change.

4 of the 8 outputs will have dry contacts (internal relays) in addition to the (8) 12V outputs.

(8) LED indicators will be featured, one for each active output

ADDITIONAL INTERRUPT INPUTS

There shall be two additional interrupt inputs. One for video alert and one for hot mic.

The video alert interrupt will send a command to the PC.

The hot mic interrupt will route the audio from the hot mic input of Mux-1 to the line-level audio out. It will also activate/deactivate all 16 paging zone relay outputs. A confirmation will be sent to the PC on activation/deactivation of the hot mic interrupt.

DTMF CONTROL CONFIRMATION MESSAGES

The following messages will be routed through the telephone audio when utilizing DTMF control. The ISD33150 is an excellent single chip playback solution. See Appendix E for DTMF control flowchart.

Message #1: “Dial [1] to access paging control, Dial [2] to access background music, Dial [3] to access energy management. Dial [9] at any time to return to main menu.”

Message #2: “You selected paging control.”

Message #3: “Select zones by pressing any combination of [1] through [16], each number separated by an [*] sign. Press [17] followed by an [*] to select all-call. Press [0*] to clear selected zones. Press [#] when finished.”

Message #4: “Zones activated”

Message #5: “You selected music”

Message #6: “Background music is currently active. Dial [0#] to deactivate.”

Message #7: “Music has been deactivated”

Message #8: “You selected energy management. Press [1] to select zones to activate. Press [2] to select zones to deactivate.”

Message #9: “Select zones to ACTIVATE by pressing any combination of [1] through [8], each number selected separated by an [*] sign. Press [0*] to clear selected zones. Press [#] when finished.”

Message #10: “Select zones to DEACTIVATE by pressing any combination of [1] through [8], each number selected separated by an [*] sign. Press [0*] to clear selected zones. Press [#] when finished.”

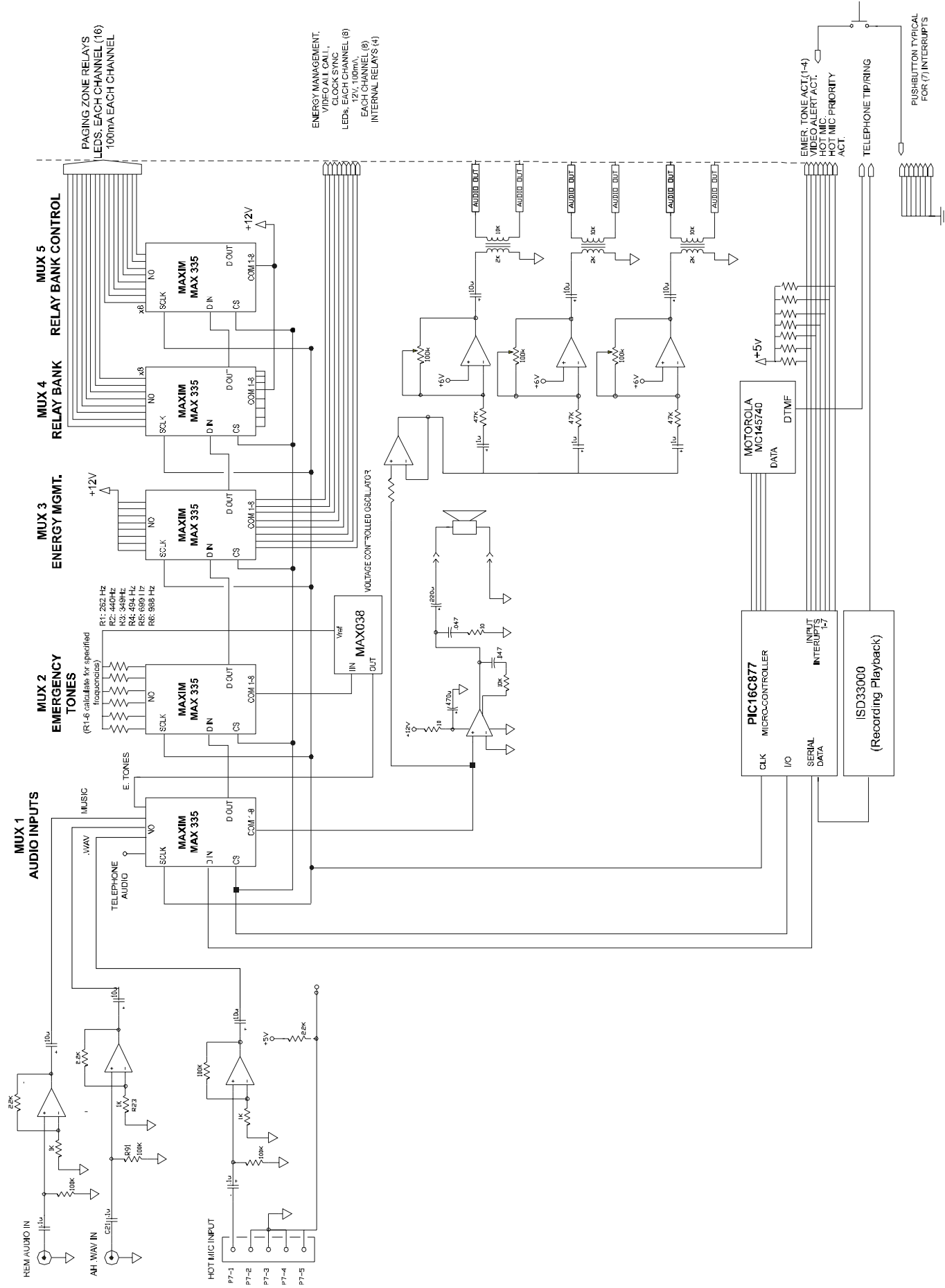
Message #11: (none)

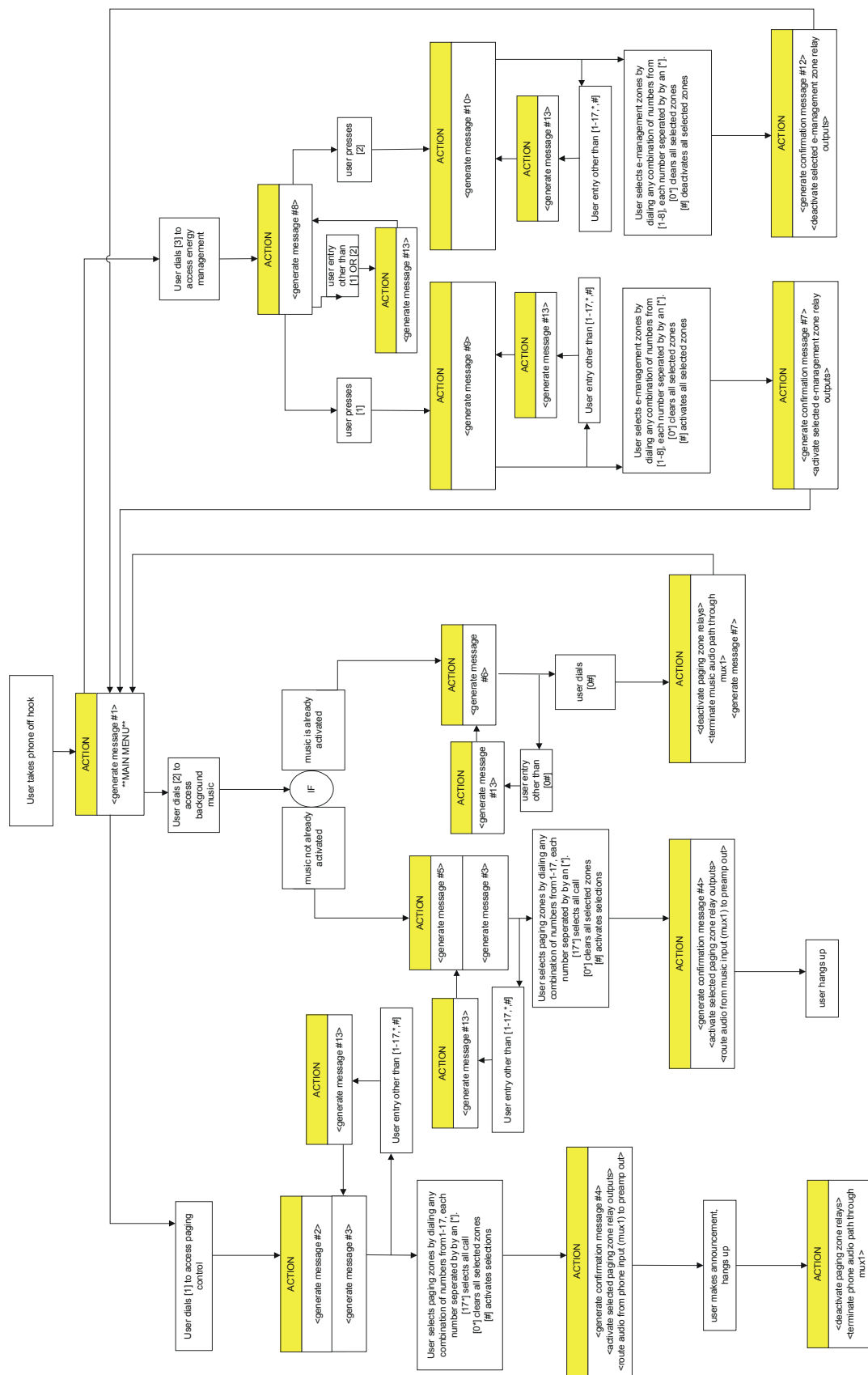
Message #12: “Zones deactivated”

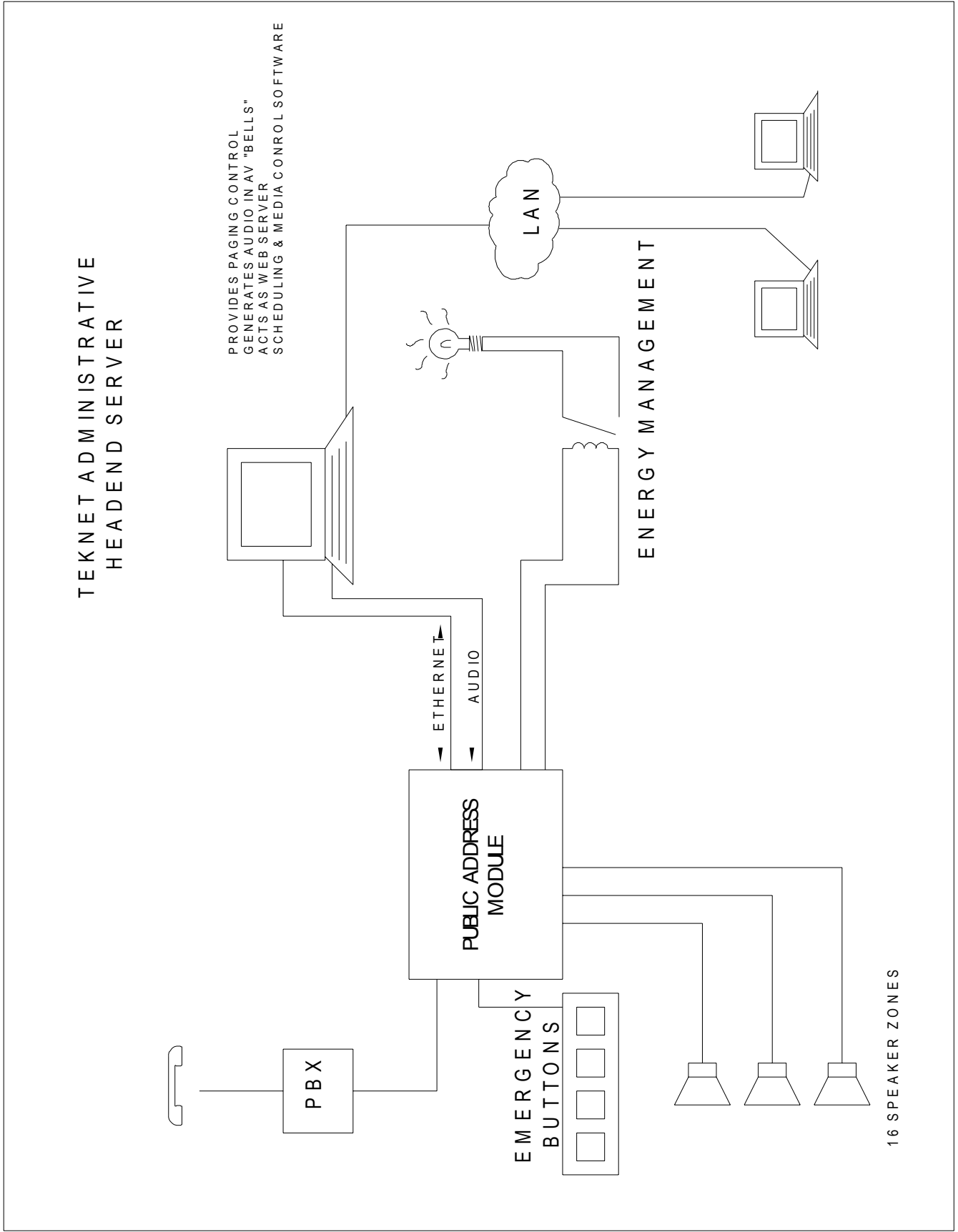
Message #13 : “Invalid entry”

(1 min 30sec total recording time)

TEKNET PAGING







IRPP-8 DEVELOPMENT PLAN

Engineering Specifications for InfraRed Patch Panel Device December 2002

Specification Overview of InfraRed Patch Panel (IRPP) Device

The IRPP device is able to route eight audio/video inputs to eight audio/video outputs. Six of these outputs are intended to drive an RF modulator, and the other two are intended to be used for tape duplication purposes. The device also records and stores 180 infrared remote commands for complete control of up to six media devices. The infrared commands and audio/video multiplexing are controlled via Ethernet commands from a PC network card using TCP/IP protocol (settable IP address and port number). An LCD/pushbutton user interface on the front panel displays routing information, prompts user through programming IR command banks, displays routing information for all channels, selects patch input routing, activates/deactivates TV black signal, and selects source of tape duplication outputs.

Overview of Inputs, Outputs, and Controls

Input A consists of a high impedance video and mono audio signal originating from a PC composite output card. This input is often used to display a clock signal on the TVs, and can be used for video alert and messages.

Inputs B-G consist of a high impedance video and stereo audio signals (One video, left, and right per input). These inputs come from the outputs of various media devices to be controlled via infrared commands.

Input H is a front-panel mounted 'Patch Input', designed for quick-connect of a camera, VCR, or other media source. Inputs are high impedance video and stereo audio.

Output 1-6 are buffered video and summed/2 left + right audio channels. Due to losses in the multiplexer, these signals must be slightly amplified to provide an output level nearly identical to the input level for each channel.

Outputs 7 & 8 are video, left, and right channel outputs intended to be used for tape duplication. They both have identical output signals. Because they retain stereo audio, they must use a separate multiplexer and tap audio signals ahead of where they are summed.

"All Call" TTL Input – this input, when active, causes output channels 1-6 to route from Input A, the PC Card signal. When deactivated, the routing states being used prior to activation must be restored.

Ethernet Command Input – an RJ45 port must be present on the device into which an Ethernet network can be connected. The unit must communicate using TCP/IP protocol, and have means for adjusting the IP address/port number in the field. 10-Base-T speed is fine. Other TCP/IP devices will be communicating on the network. Through this Ethernet connection will come commands from the PC regarding audio/video routing, inquiries about current audio/video routing states, and the issuance of InfraRed commands to be executed. The commands used across the Ethernet protocol are detailed in a later section.

InfraRed outputs 1-6 – these independent output channels will directly drive an infrared LED emitter mounted to the IR receiver of each media device. Each channel must be independently selectable and must be able to output any of up to 30 commands unique to each device. As sampled IR signal will be demodulated of its 38KHz carrier signal, the IR command stored must be re-modulated and mixed.

Bulk InfraRed output – this output may optionally be used to 'gang' multiple IR emitters in parallel for the purpose of controlling multiple TVs or other identical devices at once. In order to supply the appropriate amount of current to a variable number of load IR emitters, provisions must be made so that the addition of IR emitters does not take current

from other IR emitters. Up to 25 IR emitters may be placed on this output. As sampled IR signal will be demodulated of its 38KHz carrier signal, the IR command stored must be re-modulated and mixed.

InfraRed Learning Input – one IR photodetector/phototransistor, mounted on the front panel of the unit, will listen to IR commands played by remotes to various units and capture serial signal data to the appropriate bank. The input circuit must demodulate (remove) the 38KHz carrier signal so that the remaining serial data stream may be detected and stored. As determined by the user from the front panel interface, this stored command (sampled for one second) must be stored in the appropriate bank for later replay. Each of 6 devices has 30 command slots, for a total of 180 unique commands. To reduce NonVolatile memory required, the logging firmware should convert the data to Run-Length Encoding (RLE). Sampling rate must be adequate to capture shortest transition of fastest media device communications protocol.

User Interface – This consists of a 4x40 LCD screen and appropriate pushbuttons. From this control the user will be able to monitor and adjust multiple parameters of the device, such as selecting Patch Panel routing, selecting source for Output Ports 7 & 8 (tape duplication), viewing current routing information for all outputs, activating/deactivating TV's, and loading IR commands to each of the six media device storage banks. Ease of use and intuitiveness are essential for the user interface as the end user and possibly students will use it for tape duplication. The IR command loading menus should display which channels have data stored, allow the user to select which bank the next command should be stored in, and prompt the user through the IR signal sampling process.

User Interface Menus

Displayed on the 4 line x 40 character display, the following menus and sub-menus should be implemented. An arrow to the left of the options can be moved up/down by the user, and when pointing to the option they desire activated. Audio indication (beep/click) for each user keypress is desired. The user will at least need controls to move the cursor Up, Down, Left, Right, in addition to an Enter button and a Cancel Button (which should return them to the Main Menu).

MAIN MENU:

- Patch Input/Output Routing
 - Current Media Device Routing
 - InfraRed Command Setup
 - Other Options (manual all call, TV blanking)

Main Menu Item #1: Patch Input/ Output Routing

Item one, Patch Input/Output Routing, has two primary categories as seen below. These are the viewing/modification of where the front panel Patch Inputs are routed to, and the input source for tape duplication outputs # 7 & 8.

- View/Modify Patch Input Routing
- View/Modify Duplication Outputs

If user selects the first option, the following screen is displayed:

- Patch Input Routed to Output #5.
- Return to Previous Menu
- Change Routing Output
- Return to Main Menu

If the user opts to change the routing, they are given the following selection screen. The user must be able to move the selection arrow left and right as well as up and down. Upon selection, the display will return to the previous menu with the user's new routing choice selected.

- Select output to route to:
- Output #1 Output #2
- Output #3 Output #4
- Output #5 Output #6

If, rather than choosing to adjust the routing for the patch panel inputs, the user choose to select the source for the tape duplication outputs (#7 & 8), they would be shown the following screen:

- Duplication Outputs from Media #3.
- Return to Previous Menu
- Change Input Source
- Return to Main Menu

If the user opts to change the source they are given the following selection screen. As before, the user must be able to move the selection arrow left and right as well as up and down. Upon selection, the display will return to the previous menu with the user's new source indicated.

- Select source for duplication outputs:
- Patch In PC Card
- Media #1 Media #2
- Media #3 Media #4

Media #5 Media #6

Main Menu Item #2: Current Media Device Routing

This menu item is intended to allow the user to view the current source of each of the six output channels. It also allows the user to manually alter routing for any of the channels. From the main menu, the next menu displayed is:

- View Output #1
- View Output #2
- View Output #3
- More...

If 'More' is selected, the display goes on to say:

- View Output #4
- View Output #5
- View Output #6
- Back...

Upon selecting the view any of the outputs, the user is taken to a screen similar to:

- Output #2 from Media #1 (or PC Card, or Patch Input, etc.)
- Return to Previous Menu
- Change Input Source
- Return to Main Menu

If the user selects to 'Change Input Source', they would be given the following screen. As before, the user must be able to move the selection arrow left and right as well as up and down. Upon selection, the display will return to the previous menu with the user's new source indicated.

Select source for Output #2:

- | | |
|------------|----------|
| → Patch In | PC Card |
| Media #1 | Media #2 |
| Media #3 | Media #4 |
| Media #5 | Media #6 |

Main Menu Item #3: InfraRed Command Setup

This menu item allows the technician (or instructor) to load infrared commands unique to each media device into command banks. Upon selection at the main menu, the user is given the following menu:

- Program Media #1
- Program Media #2
- Program Media #3
- More...

If 'More' is selected, the following screen is displayed:

- Program Media #4
- Program Media #5
- Program Media #6
- Back...

If user chooses to Program a Media Device, a screen similar to the following is displayed:

- Media Device #6
- Program New Command
- Return to Previous Menu
- Return to Main Menu

If the user selects to 'Program New Command', they are given the following menu:

- Scroll to Command Number to Load:
- Command 30
- Command 1
- Command 2

As the user scrolls up/down, the arrow remains in the same place and the bottom three lines of text change to indicate a scrolling circular display. The currently selected command is the one displayed left-indented with the arrow pointing to it, and it remains on the same line always. The command that is on this line when the user presses the 'Enter' button is the one that is selected.

For instance, if the user presses enter after moving the display to:

- Scroll to Command Number to Load:
- Command 16
- Command 17
- Command 18

They will then be shown the following screen:

**** Activate IR Command ****

(CANCEL) to Abort

If the user presses the Cancel button (as at any time), they are returned to the Main Menu. If, however, the IR detection circuitry samples a valid IR command, the user is shown:

Command Sampled and Stored.

Press Enter to store more commands
To this Media Device.

If the user presses Enter, they are taken to the previous Command Number selection screen (for the same Media Device) to load Program the next command.

Main Menu Item #4: Other Options

This screen allows the user to view status and select various tasks related to the operation of the video equipment, such as manually activating / deactivating Video All Call and manually setting all outputs to blackscreen (or restoring all outputs from blackscreen to the routing inputs they were prior to activating blackscreen).

Ethernet Protocol

Two way communication exists between the IRPP and a PC via 10-Base-T Ethernet. Communications. TCP-IP packets issue commands from the PC network card, and the IRPP performs the required task or replies with the requested information, and issues acknowledgement of command success or failure. The following command set makes use of these outputs, media inputs, and command banks. Values are ASCII value.

A – AH3 PC Card Input signal
B – Media Device Input #1
C – Media Device Input #2
D – Media Device Input #3
E – Media Device Input #4
F – Media Device Input #5
G – Media Device Input #6
H – Patch Panel Input

1 – Output Channel #1
2 – Output Channel #2
3 – Output Channel #3
4 – Output Channel #4
5 – Output Channel #5
6 – Output Channel #6
7 – Duplication Output (1 of 2)
8 – Duplication Output (2 of 2)

IRPP Alive Inquiry:

PC send “A”

IRPP replies with “T”

Output Channel 1 – 6 Routing Control:

PC Sends “R [A-H] [1-6]”

where [A-H] if the letter associated with the input channel or media device,
and [1-6] correspond to outputs 1-6.

For example, “RB1” routes Media Device #1 to output #1.

IRPP replies with “OK”

Current Routing Status Inquiry:

PC Sends “I [1-6]”

where [1-6] correspond to output channels 1 through 6.

IRPP replies with “[1-6] [A-H]”

where [1-6] is the output channel specified by the inquiry and
[A-H] is the current video/audio source assigned to that channel.

Issue InfraRed Command:

PC Sends "C [B-G] [1-30]"

where [B-G] selects Media Device #1 through #6 as detailed above and
[1-30] selects the appropriate command in that media device's bank.

IRPP replies "OK"

Blankscreen all TV's Command:

PC Sends "TV0"

IRPP replies "OK"

Return from Blankscreen All TV's Command to Previous Routing Configuration:

PC Sends "TV1"

IRPP replies "OK"

- Note: if IRPP receives a data packet to its particular IP address and Port that is not a valid command, it will reply with the string "ERROR"

Items to Remember:

1. Make certain that video (and audio) signals remain clean and noise free, and that microcontroller & digital logic switching do not induce noise.
2. Audio (and perhaps video) switches have a particular resistance which will act as an attenuation to the signal. All signals must be amplified to their proper incoming line level at the final output.
3. Output channels 1-6 have their audio channels (left and right) summed and averaged. Output channels 7 & 8 do not. Care must be taken that the appropriate audio switch path (L & R stereo or combined mono) is routed to the output type needed, and that both drivers are not left driving the line simultaneously.
4. Make certain that video changes sync precisely and do not pop or seek looking for the next frame start.

Items to Research:

1. Creation of black video signal?
2. Which output signal is the clock signal that must be buffered to drive a long line/load?
3. What is sampling rate needed to capture fastest serial pulse?

T&M ESTIMATE

Sean J. Varley
Director of Electrical Engineering
Cornerstone Design Group, Inc.
11603 Teller Street, Unit E
Broomfield, CO 80020
email: sean.varley@cornerstonedesign-inc.com
voice: 303-464-9649
fax: 303-464-9571
toll free: 1-888-353-4562
company web: <http://www.cornerstonedesign-inc.com>
Confidential
Date: 12-14-02
Project: CDG02019
This quote is valid for 60 days from submission.

Steve,

In response to your request for a project costing and preliminary schedule based upon your specification document dated December 2002 for an infra-red patch panel device, I've put together some information for you.

In your email, you asked for both a normally scheduled project (16 weeks) and an accelerated project (8 weeks). Our normally scheduled project in this case came out to 12 weeks, with current engineering resources available. There wasn't any need to extend it to 16 weeks in this case. I've included both our normally scheduled project and an accelerated one.

Our estimated engineering time for this project (both normally and accelerated) is [REDACTED] hours (@90/hr) for a NRE engineering cost of \$[REDACTED] for the 12 week project schedule and an accelerated engineering charge rate of \$[REDACTED]/hr for a NRE engineering charge of \$[REDACTED].

Additional cost for the project would include components, PCB fabrication, and contract manufacturing charges, and can be discussed further if necessary.

Our estimates are based on data currently available, and may change depending on specification changes.

Let me know if you need any more information, or have questions concerning our T&M estimate.

Regards,

Sean J. Varley

Director of Electrical Engineering

Appendix B: Pending U.S. Patents on TekNet Equipment

- Media Administering System and Method (Pending)
- Audio / Video Media Controller (Pending)
- Video All-Call System and Method for a Facility (Pending)
- Remote Control for a Facility (Pending)
- Method of Accessing Audio and Video Content and Control Interface (Pending)
- Multi-Campus Mobile Management System (Pending)
- IP Based Scheduling and Control of Digital Video Content Delivery (Pending)

Appendix C: Custom Business Plan Template¹⁰

Executive Summary

As implied by the title, this section should summarize the key elements of the business plan. It should include several items:

- A shortened description of the opportunity
- The strategic decisions in sections 0 and 0 should be summarized into a prose statement of overall strategy
- A description of your key competitive advantages
- An annual view of revenue, net income and cash flow
- The size of the investment that must be made to launch the business
- The major risks that the proposed business faces
- Any actions that are being requested of executives.

This section may be as short as 1.5 pages or as long as six+ pages, depending on your needs. The longer version is warranted if you feel it is unlikely that your decision makers will read the entire business plan. In that case, an executive summary section that covers all of the important points is necessary and may require several pages.

This section should be developed only after the remaining sections in the main body of the document have been largely completed.

Opportunity

Provide a statement here that summarizes for the decision makers the attractive opportunity that you want to pursue. What factors have come together to make this business proposal a timely one and what default business will be realized if this proposal is not accepted? If you will be proposing a venture approach, then why is there potential here that cannot be realized in the normal Swift business structure? What is the market window that you are trying to hit?

Business Description

Mission

Provide a description of the purpose of the business. This is the domain in which your business will operate for building value. A good mission will define the scope and boundaries of your business. It should give a clear view of the kinds of products or services that will be sold, and the kinds of customers that they will be sold to, without going into the detail that will be needed for market segmentation and product strategy decisions. An example (hypothetical) mission is:

Our mission is to engage the Federal, State and local government verticals and develop processes and implementable initiatives to sell North Supply products and services into these verticals through appropriate channels.

Our mission is to provide unique technology based administrative and media distribution solutions for the education market.

¹⁰ This template was created by the Director of Business Development. Used with permission. Name withheld for confidentiality.

History

Use this section to explain to the reader how you got to this point. In some cases this section may be critical to providing the context for understanding why there is now an opportunity that should be exploited.

Competencies and Assets

In this section you should provide a description of the unique assets that will exist in your business and the ones that will need to be found elsewhere. Examples are business and technical competencies that are embodied in a specific group of individuals, inventions that are patented or patent pending, or technologies that exist in one or more platforms upon which new products and services can be delivered.

It is expected that intellectual property, for example a patent, will be managed carefully and in accordance with Swift's policies. Be sure to consult the Intellectual Property Management organization regarding your plans.

Current Products/Services

If the business currently exists in some form then provide a description of the products/services that are available now. This list will help the reader to better understand the boundaries around the business that you are proposing to launch.

Impact on Swift

This section provides a view that is important to understanding the type of business that should be launched. For example, if there are many important linkages with Swift then this business may best be managed as part of another Swift business, or perhaps as an internal venture. Conversely, if this business has no links to Swift's strategy or current businesses then perhaps it should be spun-off as an external venture.

You should describe all of the interfaces that this business has or will have with other Swift business units. For example, will any manufacturing or development be assigned to Swift? Will Swift sales channels be used? Will any of Swift's existing customers be targeted by this business? Is interaction between your engineers and Swift's important to your business success?

Any potential of competition or cross-elasticity between this business and other parts of Swift should also be described in this section.

Market and Industry Analysis

An "industry" is a group of companies competing to sell products/services into a "market." In this section you will describe both your industry and your market.

Market Description

Only a high level description is needed here since most of your market analysis will be on market segments. You should also provide a graphical or tabular view of the total size of the market, projected for the next several years and reference the sources for that information.

Market Segmentation and Sizing

Describe a relatively small set of market segments into which virtually all of your and your competitors customers can be mapped, and your rationale for dividing the market that way. These segments should capture customer buying behavior such that customers within the same segment are homogeneous enough to be treated similarly in your total approach to them, as described in your market strategy (section 0). In addition, if your segmentation is effective, customers in different segments will require different market strategies. For each important market segment, describe its size in \$US and project its growth rate. The current size of a market segment is equal to the total of all purchases that the customers in that segment made from you and your competitors in the most recent year that data is available.

A table such as the following may be useful.

Table 1: Market Segment Assessment

Segment	Size (\$K/yr.)	Growth Rate (%/yr.)	Our Current Share
Market 1			
Market 2			
Market 3			
Market 4			
Market 5			

Market Window and Trends

For each market segment, provide an analysis of the window of opportunity for products such as yours, describing the timing for the window openings and closings and the rationale. How important is it to be the “first mover” in the market segment? Is “best” better than “first”? Also describe any important trends that are apparent. Example trends would include a shift in the proportion of purchases toward high end products, a growing willingness to outsource, an increasing number of inexperienced and poorly capitalized customers, etc.

Industry Description

In this section you should describe your industry from a strategic perspective. For example, is it an oligopoly or are there many diverse competitors? Are the product life-cycles long or short? What are the typical sources of capital? You should also describe any trends that are apparent in the industry. Example trends are a move toward a “rule of three” type shake-out, a growing dichotomy between new entrants and established players, etc.

Enumerate all of your significant competitors. Significant competitors include those with the largest shares and those with the largest growth rates. Any approach to sub-segmenting the list would also be helpful for communicating insight about the competitive landscape.

Table 2 is a proposal for the information that you should develop about the major players in your industry.

Table 2: Competitors

Competitors	Last Year's Sales (\$K)	3 yr. Avg. Growth Rate of Sales (%)	3 yr. Avg. Profit Margin (%)	Last Year's Share (%)	Share Trend (up, down, flat)	Market Segment Targeted
Competitor 1						
Competitor 2						
Competitor 3						
Competitor 4						
Us						
INDUSTRY OVERALL	enter total for industry	enter weighted avg for industry	enter weighted avg for industry			

Industry Structure and Attractiveness

Supplying a good product that customers will buy does not guarantee a good, or even any, profit margin. Some industries are fundamentally structured for good returns while others deny profits to even the most successful competitors. The purpose of this section to provide an analysis of your industry, and justify it as sufficiently attractive for Swift's investment.

This section (0.*) is optional simply because it is difficult, not because it is unimportant. It is recommended that you perform this step at some point early in your business life-cycle, even if you are approved for launch without it.

“Five Forces” Analysis

In this section you should summarize the results of a “Porter Five Forces” analysis of your industry.¹¹

Margin Potential

Porter's “Industry Attractiveness” is a concept that predicts the profitability (ROIC) of the average competitor in an industry. Take care to not distort your analysis in order to make your industry appear attractive; strong players can generate healthy returns even in relatively unattractive industries. Based on the Five Forces analysis, you should describe the relative attractiveness of your industry, and predict the Return on Invested Capital (ROIC), profit margin, or gross margin that a successful player can reasonably expect to realize.

Industry Success Factors

Enumerate and discuss your industry's success factors. These success factors are the five to ten business areas where competitors in this industry need to be especially proficient, in order to have a reasonable chance for success. **These may or may not be functions that are directly observable by your customers.** Try not to include a direct product

¹¹ See also: Michael E Porter, “Competitive Strategy”, The Free Press, 1980, Chapter 1 on “The Structural Analysis of Industries”

characteristic, but rather identify the important areas of the business that enable you to achieve the key product characteristics. For example, rather than listing “Product Ease of Use,” you could list “Strong Human Factors Competency” if that is the means used to achieve easy to use products. Also list success factors that may not be directly observable in your products. This discussion will provide the reader with a much better understanding of your industry, and provides the foundation for the competitive analysis which follows.

Areas where you may identify success factors include global manufacturing, partner relations, brand management, intellectual property management, mergers and acquisitions, third party program management, supplier management, order processing, relationship with the financial community, employee recruiting/retention, product realization intervals, volume-based purchasing power, vertical integration, location and number of sales offices, breadth of product line, customer support, distribution, executive selling, etc.

Competitor Analysis

For each competitor, including yourself, provide an evaluation of their strength relative to each of the success factors identified previously. Draw a conclusion as to which competitors are most formidable.

Caution: The information in this section is difficult to obtain. Take care to evaluate yourself as objectively as possible. A table such as the following may be useful. Indicate a score of 1 (worst) to 5 (best) for each cell and provide a ranking in the last column.

Table 3: Competitive Analysis
(Hypothetical Data)

Success Factor Company	Global Manufacturing	Scope of International Sales Presence	Manufacturing Economies of Scale	Large Software Project Mgmt	Overall Ranking
Alcatel	5	4	5	3	1
Nortel	3	3	3	4	5
Ericsson	4	5	2	3	3
Siemens	4	3	3	4	4
Swift – NS	3	4	4	5	2

More comprehensive data should be developed and documented in the Appendix: Competitor Research.

Business Strengths and Weaknesses

“Strengths” are competitive advantages that you have, but only if you have strong evidence that they will be useful in this business, that is, they relate to one or more of the industry success factors. For example, your R&D team may have a strong recruiting program for real-time software application developers, but that is not strength if your products will be shrink-wrapped applications for desk-top PCs.

Your Competitive Analysis Table should provide an initial set of strengths and weaknesses, and you should add any others that you feel are pertinent to provide a list in this section.

Macroeconomics Factors

This section is optional. Use it to describe economic forces from outside your industry that may impact your business success.

Industry Opportunities and Threats

“Opportunities” are events or trends in the industry or market that could improve the attractiveness of the industry, or provide a competitor with a possible course for obtaining advantage. Opportunities usually apply to all or most of the competitors in the industry, although due to the variations from one competitor to another an opportunity for one may be a threat for another.

An example opportunity would be a government action that requires your customers to deploy new capabilities or buy upgrades to the products you have sold them, e.g. Local Number Portability. An example threat would be technology advances that may make a substitute product (i.e. a product from a different industry that can provide roughly the same benefit) more attractive, e.g. the emergence of TCP/IP and gigabit Ethernet reducing the need for ATM.

Based on the analysis in sections 0 and 0, make a list of the opportunities and threats that your industry faces.

Market Strategy

Your strategy will exist in the form of a set of coordinated decisions which guide the allocation of resources. The following sections will document the decisions that you have made in each of several critical areas. If your business has additional important areas that are not covered here then feel free to add them.

It is important that all of the decisions across the following areas are consistent and reinforce each other to achieve a cohesive overall market strategy. In that regard, the ordering that follows is important. Market targeting decisions come first and should drive all others. Positioning decisions should be made based on the segments targeted, and the positioning you choose will impact your pricing and subsequent decisions. The remaining decision areas have a similar sequence.

The competencies, strengths, weaknesses, opportunities and threats that were documented previously must each be addressed in the strategy decisions that follow. These factors provide the main context for determining which market segments to target, how to position in those segments, and so on for every strategy decision you make.

Target Market Segments

Based on your assessment of the market segments (see Table 1: Market Segment Assessment), those that are most attractive and those that are most accessible, choose the segments that you will target and identify them here along with your reasoning. For each segment you should give examples of some key customers in it and provide a paragraph describing the common behaviors they exhibit.

Positioning and Promotion

Based on your knowledge of the segments that you have targeted, describe how you want the customers to view you. This should be a statement that concisely articulates just what it is that makes you different from your competition. If you are targeting more than one

segment then you may need to develop a different positioning for each segment. Some examples of simple positioning statements are as follows:

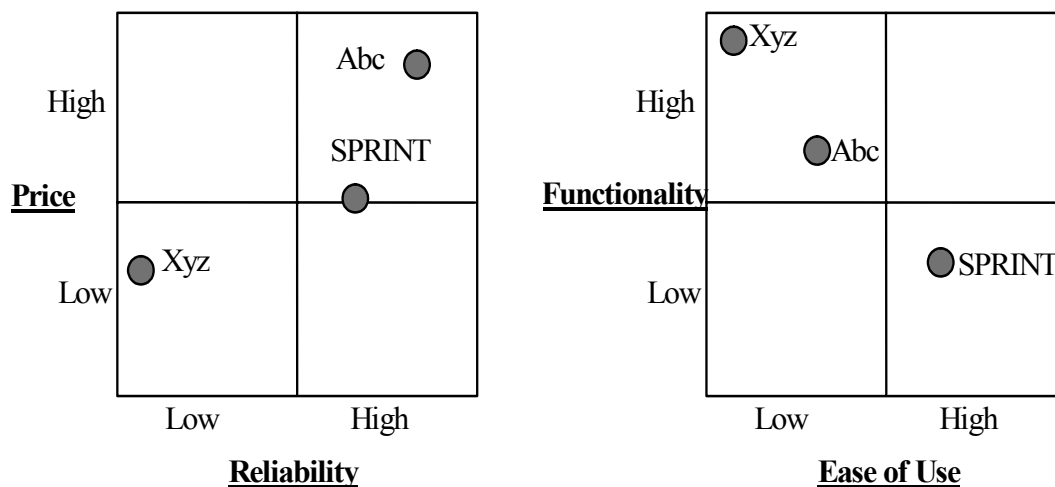
- “We are the premier high-technology provider. Partner with us if you want to have the most innovative products.”
- “We are the full service provider. When you buy from us you can be assured that we will handle every detail.”
- “We are the source for the best price. Don’t even bother shopping around because we’re always lowest.”

The Appendix: Value Propositions will build on your positioning to provide statements that are specific for each application of your products to market segments.

Be careful to avoid positioning statements that attempt to be all things to all people. For example, “We are the first to market with the latest technologies at the lowest cost and highest quality, and we provide end to end products and services.” Such a positioning statement reflects a lack of understanding of what the targeted market segment cares about most and what the capabilities of your competitors are.

To further clarify your positioning, you should develop and include a series of “Two by Two’s” that depict your competitive niches versus those of your competitors. Here are some examples:

Figure 1: Example Positioning 2x2s



Also include in this section your strategy for promoting your products. This may include media advertising, trade shows and recommendations from industry consultants. The Appendix: Promotion Plan should be used to detail your tactics in this area.

Pricing Strategy

There are several strategy decisions to be considered in the area of pricing. The following list includes some of them and your business may require others:

- Indicate where you intend to price your products/services relative to the competitors - above, at, or below. This decision is often derived easily from the positioning.

- What is the willingness to pay? Will your prices be set based on your costs, or based on market perception of value added?
- Is the gross margin that results from your chosen price and expected costs consistent with the industry analysis provided in section 0 Margin Potential on page 84?
- Will you use usage-sensitive pricing, or per-unit pricing (e.g. per circuit pack, or per client seat), or a mixture?
- Will you price and sell components or only end to end systems?
- Will services be included in the product price, or optional?
- Will warranties and customer technical support be included in the price, or optional?
- Will you provide financing or other special terms such as deferred payment?
- When and how much will you discount?

Your specific pricing tactics should be documented in the Appendix: Price Sheet, and your warranty and support plans should be documented in the Appendix: Support and Warranty Plans.

Product/Service Strategy

Document your strategic product decisions in this section. For example, how broad will your product line be? Will you develop it all in-house or will you outsource some things to partners? Will you put a lot of emphasis on the latest product technologies or will you emphasize process technologies for low cost? Will you provide extensive warranties or minimal? What level of coverage will you staff customer technical support for? You may want to document manufacturing strategy decisions here also, or alternatively use a separate section for them.

List your current and proposed new products and evaluate their fit to each of the market segments. Draw a conclusion as to which market segments your current and planned products serve best. A table such as the following may be useful. In the table, an existing product is one that you are currently selling, if any. An existing market segment is one which contains at least one customer that you have made sales to and a new market segment is one that you have targeted (in section 0) but have not yet sold in to. Of course, existing products and markets only apply if your opportunity involves an already existing business. The darkened bullet indicates a very good fit, a hollow bullet indicates a poor fit, and an empty cell indicates that there is no compatibility at all.

Table 4: Product/Market Analysis

	Existing Market Segs	Market 1	Market 2	Market 3	Market 4	New Market Segs	Market 5	Market 6	Market 7
Existing Products									
Product 1		●	○	●	○		○		
Product 2		●	●						
Product 3		○	●						
Service 1		●	○	●			○		
Service 2		●	○	○	○				
New Products									
Product 4		○		○	●				○
Product 5		○		●	○		○		
Service 3		○		○	○		○		

For each product/market segment combination that you intend to pursue, you should develop one or more value propositions and document them in the Appendix: Value Propositions. Also, schedules and development plans for your new products should be documented in the Appendix: Detailed Product Plans. Lastly, you should document your specific plans and staffing for customer technical support and warranties in the Appendix: Support and Warranty Plans.

Channel Strategy

Use this section to document the means that you will use to access customers. Examples of relevant items are building a direct sales force, sales compensation strategy and the use of partners and VARs. You should make an explicit statement as to your plans for using or not using existing Swift sales channels. Describe the staff positions that you will create or sustain for implementing the channel. For example, you may only need a channel manager if you will be using an external channel that already exists, or you may need two account executives for each region if you will be selling direct.

Again, the decisions in this section must be consistent with all others. For example, an expensive and complex new product cannot be sold successfully via mail-order, and a product that is priced with thin margins cannot be profitably sold via a direct sales force. Channel tactical plans should be documented in the appendices. Sales team staffing should be included in the Appendix: Detailed Staffing Plans. Initial customers to be targeted by the sales team should be included in the Appendix: Sales Funnel.

Management and Organization Strategy

This section is separate from the previous but the strategies documented here should nevertheless be completely consistent with and derived from the market strategy. That is, the organization should be designed around the strategy for going to market. Don't design a centralized and hierarchical organization for a business that must respond with lightning speed to market events, and don't design a distributed and loosely-coupled organization for a business that has large and very complex products.

Business Structure

In this section you should describe the structure that will be used for managing your business. Examples include becoming part of an existing business unit, becoming an internal venture, or spinning-off into an external venture.

Also give a high level description of all of the key functions in the business, and depict how they will be organizationally related. Give special attention to important functions that will not be directly resident in the business.

A hierarchical org-chart, with names of people where known, should be provided in the Appendix: Organization Chart. If you are recommending an internal or external venture then you should not propose names for the top levels of the organization. The decision makers at Gate II and other key financiers outside of Swift will reserve the right to determine who will lead the venture.

Staffing Plan

Indicate where you must grow staff in order to grow the business. Identify gaps that exist for staffing the team that must be in place.. Give special attention to people with skills that cannot be readily located through normal means, and indicate how those positions will be filled.

The staffing plan must be consistent with the rest of your business plan. For example, the sales team may need to grow in advance of significant revenue growth, and the development team may need to be increased many months before you introduce several new products. As a sanity check you should calculate the Revenue/Headcount ratio for each year for the life of your plan and compare it to other comparable and best-in-class companies. Strong evidence will be needed for justification if your ratio is significantly better than comparable companies.

The Appendix: Detailed Staffing Plan should be used to show the monthly plan for staff levels of each function.

Milestones

In this section you should describe the major milestones between now and the point where the business turns cash flow positive, plus any others beyond that point that are significant. In particular, the launch date for the business should be plotted.

The Appendix: Business Launch Schedule should be used to provide a more detailed gantt-chart view of the milestones for the first year of your business.

Financial Plan

Provide a pro-forma summary annual income statement and annual cash flows. Identify the point where your business will be at its most cash-negative position and therefore the

amount of investment that will be required. Identify the sources that will provide that investment.

Note that ventures, like any stand-alone business, are operated on a cash basis. The value you build will be determined by cash flows, not ROI. Likewise, the investment that you require is equal to your most negative monthly cash position rather than your most negative annual BGP to expense gap.

You should also describe the financial ratios that you believe are most important for understanding your business and compare them with other comparable companies. For example, what is your predicted revenues per total headcount and why will they be greater than or less than other companies with a similar business? How long until you reach break-even?

The Appendix: Pro-Forma Financial Statements should be used to provide complete versions of your quarterly and annual statements, and the key performance ratios.

Risk Management Plans

“Worst-Case” Financial Plan

In this section you should identify and discuss the most uncertain and impacting factors in your business. Examples risks are things like the predicted market growth rate, your ability to win important customers, your competitors’ response to your moves. For these factors you should demonstrate how your profitability is impacted by the variation that each could realize.

Competitor Research

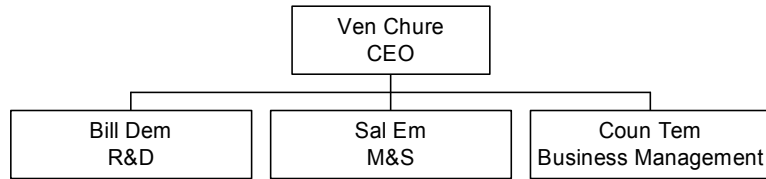
Use this appendix to accumulate information about your competitors. A table like the following should be developed for each.

Competitor Name

Contact	address, phone
WWW URL	http://...
Partners	
Product Names	
Product Descriptions	
Market Segments	
Revenues	\$ in year X
Strengths	
Weaknesses	

Organization Chart

Provide a hierarchical org-chart showing all functions and include names of individuals where they are known. A text description of the roles/responsibilities of each function should be provided.



Detailed Staffing Plans

Include here the allocation of staff to functions, and the allocation of expenses to derive the per headcount cost. The total staff expenses for R&D, M&S and G&A, plus any other categories that you have (e.g. partner liaison), should be derivable from the data in this appendix, and should also correlate to the corresponding expense lines on the Income Statement.

The following two tables serve as examples:

Table 5: Functional Staff Allocations

	1997				1998				1999			
HEADCOUNT	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Development	13	13	12	12	12	12	10	10	10	10	10	10
System Engineering	2	2	3	3	3	3	2	2	2	2	2	2
Product Mgmt./ Business Mgmt.	3	3	3	3	4	4	4	4	4	4	4	4
Professional Services	0	0	1	1	2	3	3	3	4	4	4	4
Sales Team	5	5	5	5	5	5	6	6	6	6	6	6
Bid Support	0	0	1	2	2	2	3	3	3	3	3	3
Project/Process Mgmt.	0	1	2	3	3	3	4	4	4	4	4	4
Software Support	3	3	4	4	4	4	5	6	6	6	6	6
Coach	3	3	3	3	3	3	3	3	4	4	4	4
TOTAL	29	30	34	36	38	39	40	41	43	43	43	43

Table 6: Headcount Expense Calculation

	<u>PER HC</u>
SALARIES	70.0
OVERTIME	0.0
IPA/APA	7.0
BENEFITS	26.1
TOTAL PRIMARY EXPENSES	103.1
DEPRECIATION	0.0
RENT	10.0
BUILDING SERVICES	2.0
SERVICES PURCHASED - OTHER	1.1
SERVICES PURCHASED - RV'S	0.6
OFFICE SUPPORT	0.0
REPAIRS & MAINTENANCE	0.0
SUPPLIES	4.0
TELECOMMUNICATIONS	1.2
RENTALS	0.2
TRAVEL & LIVING	2.0
RELOCATION	0.0
EDUCATION - EXTERNAL	0.6
FREIGHT	0.3
TECHNICAL PUBLICATIONS	0.0
BLX	0.3
INTERNAL SERVICES-ADMIN	
REPRO	0.0
ART/MEDIA/PHOTO	1.0
PROCUREMENT	0.2
SYSTEM SUPPORT	0.1
INTERNAL SERVICES RENDERED	0.0
SERVICES RECEIVED	0.5
OTHER SUPPORT	2.0
O C A	0.0
OTHER ACTUAL	0.0
TOTAL SUPPORT	26.1
<u>TOTAL EXPENSES</u>	129.2

Detailed Product Plans

For each product list the cost (staff) to develop, the date that development will begin, and the date that the product will be delivered. Also identify the application and first customer, if known, for each product.

Price Sheet

This appendix should contain a table of your products and services, along with specific price and discount information for each. If your business will develop an ad-hoc sales contract with each customer then you may be unable to specify your prices exactly. In that case you should provide the general guidelines that you will use for determining the price for each contract.

Pricing that you should consider:

- Product
- Services
 - Installation
 - Engineering
 - Maintenance Contract
 - Extended Warranty
 - Operations
- Technical Support
 - Tiers
 - Standard
 - Enhanced
- Documentation
- Special Bundles or Configurations
- Discounts
- Promotional or entry pricing vs. Long-term pricing

Value Propositions

A value proposition is a statement of an offer to a target customer segment that profitably delivers a unique set of benefits better than the competition.¹² For each product/market segment combination you should develop a value proposition statement. However, if a single product will have more than one application in a segment, then you should develop a separate value proposition for each application.

Geoffrey Moore's "Elevator Test" provides one good template for a value proposition.¹³

The elevator test format is as follows:

For (name the target customer/segment)

Who (statement of the need or opportunity)

The (product name) is a (product category)

That (statement of key benefit - compelling reason to buy).

Unlike (primary competitive alternative),

Our Product (statement of primary differentiation).

¹² See "Creating Profitable Value Propositions" Course from NS Global Marketing

¹³ See "Crossing the Chasm," Geoffrey Moore, Harper Business, 1991. Page 161

Appendix: Promotion Plan

This appendix should include a list of the promotional tactics that you will employ over the next year, and an estimated cost and schedule for each. It should include plans for

- Advertising
- Consultant and Trade Magazine reviews
- Announcements & press releases
- Salesware development & printing
- Trade Show Displays
- Packaging Inserts
- Rewards for References
- etc.

Sales Funnel

A strong sales funnel based on a concerted effort to develop customer relationships while you are in the formation stage will add significant credibility to your business plan. Use this appendix to document the initial customers that your business is pursuing. A table showing customer (grouped by market segment), product, application, potential sales wins and schedules would be useful.

The summation of the high probability sales that are projected in the funnel should correlate to the top line of the initial quarters of your income statement.

Table 7: Sales Funnel

Venture Collected Cash Estimates for Fiscal Year 1997

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Owner
Network Systems Funding							2,900					-900	2,000	xx
Telecom Channel														
- AT&T									500				500	cc
- BellSouth											250	250	500	w
Internal Lucent													1,000	
PRC	95					103	34	34	35	34	35	35	405	zz
* BLG	45		70										115	dd
- NAR CBU		25	25					20	20	20	20	20	150	ss
- A/P CBU							25	25	25	25	25	25	150	qq
- EMEA CBU									50	50		22	122	tt
Systems Int./3rd Party													942	
* Anderson Consulting								75	75			250	400	yy
- Unisys										100	100	300	500	ee
- Deloitte&Touche										75	75	100	250	jj
- IBM												250	250	rr
													1,400	gg
Monthly Total Cash Inflow	140	25	95	0	0	103	59	154	705	304	505	1,252	3,342	

Support and Warranty Plans

This appendix should be used to document your specific plans for providing warranties and customer technical support. Example items to be covered include: Class A changes, bug fixes, upgrades, sparing, repair. You should also describe your customer technical support in terms of tiered support, hours of operation and staff required. You should specify the length of the standard warranty interval and include the actual wording of the warranty document to be included with the product or in the sales contract. Also specify the means that will be used to track the warranties so that every call into your support line can be handled as either in-warranty or out-of-warranty.

Other Tactical Plans

Use this appendix to document other plans that are important for your business. Examples are:

- Quality Plan
- Documentation Plan
- Manufacturing Plan
- Billing and Collection Plan

Other Expenses

Use this appendix to identify significant other expenses that have not been described elsewhere. Examples include capital equipment purchases, trade show space, salesware printing, etc.

The capital equipment purchases should correlate to the corresponding line on the Balance Sheet. The other expenses should all correlate to the appropriate area of the Income Statement.

Pro-Forma Financial Statements

Income Statement, Balance Sheet, and Cash Flow Statement. Those statements should be developed and included here.

In general, no new information should appear in this appendix. That is, all of the expense, capital and revenue items should have been described previously.

Business Launch Schedule

This appendix should contain a Gantt chart view of the important tasks to be completed in the first year of the business. You may want to extend the chart to the point where the business will become cash-flow positive, if that is longer than one year.

Guide to using this Template

The preceding template is a guide for developing your business plan. As an entrepreneur that is about to take on the significant career risk of participating in a new business, you are encouraged to view this template as a tool that will help you make well-informed decisions on if and how to take that step. This template is intimidating in size and detail, especially if you were hoping to reach a commercialization decision quickly. Use it as a guide in defining your business to the level of detail that is warranted for your opportunity, and recognize that you may be able to document your plans to the satisfaction of yourself and others without providing in-depth material in all sections.

The following definitions are assumed within this template:

- **Pro-Forma Financial Statements:** These are the Income Statements, Balance Sheets and Cash Flow Statements that describe the predicted financial status of the business projected forward in time, assuming this proposal is accepted. They include the Net Present Value calculations and other key financial metrics.
- **Business Case:** This is the description of a business opportunity and the strategy that will be used to exploit it, along with Pro-Forma Financial Statements
- **Business Plan:** This is the Business Case and the detailed tactical plans that describe more precisely how resources will be applied in exploiting the opportunity.

Your business plan documents in a convincing way how you will add significant value for Swift by using capital investments, intellectual property assets and competencies to exploit an opportunity. It also serves as a place to document your tactical plans as they are created.

Your business plan should be the output of a team of individuals that represent broad skills in the areas that are important to your business, such as the following:

- The technology or other assets that you are commercializing
- Marketing in general, and your markets in particular
- Human Resources
- New business creation

This template covers strategy decisions, tactical plans and the pro-forma financial statements. Each section contains directions that guide you in developing and structuring the information so that it will be useful to yourself and the reader. Those embedded directions should be deleted and replaced with the text that you develop. The structure provides for the main body of the document to be used for strategic plans, with detailed tactical plans following in the appendices. The financial statements appear both in summary in the main body and in detail in the Appendix: Pro-Forma Financial Statements.

Your business plan should be developed and documented in phases.

- **Opportunity Statement:** First, you should document your Opportunity (section 0) and Business Description (section 0). This initial document can usually fit within 2 pages

and provides a common understanding of the opportunity for your business planning team to unite around.

- **Market and Industry Analysis:** Next, you should do in-depth analysis into your Market and Industry, and document your results in section 0.
- **Business Case:** Next you should develop and document your strategy decisions (sections 0 and 0), key milestones (section 0) and an initial view of your financial statements (section 0 and Appendix: Pro-Forma Financial Statements). At that time you will also have the information needed to develop your executive summary (section 0). After your strategy, milestones and initial finances are ready you should hold a review of that business case to get feedback from objective and knowledgeable people outside of your business. If the review is favorable, then you can use the Business Case to get support for the effort that will be needed to develop the remainder of the Business Plan.
- **Business Plan:** Lastly, you should develop and document your tactics and final financial statements using the Appendices that are provided. This plan will be an important tool for mobilizing your resources consistent with your strategy, and for helping new members of your team to quickly become productive.